STOCK QUALITY & DISTRIBUTION 1981

Nova Scotia

Department of Lands and Forests

STOCK QUALITY AND DISTRIBUTION

1981

PROVINCIAL FOREST NURSERIES

Compiled by

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NOVA SCOTIA DEPARTMENT OF LANDS AND FORESTS

March 1982

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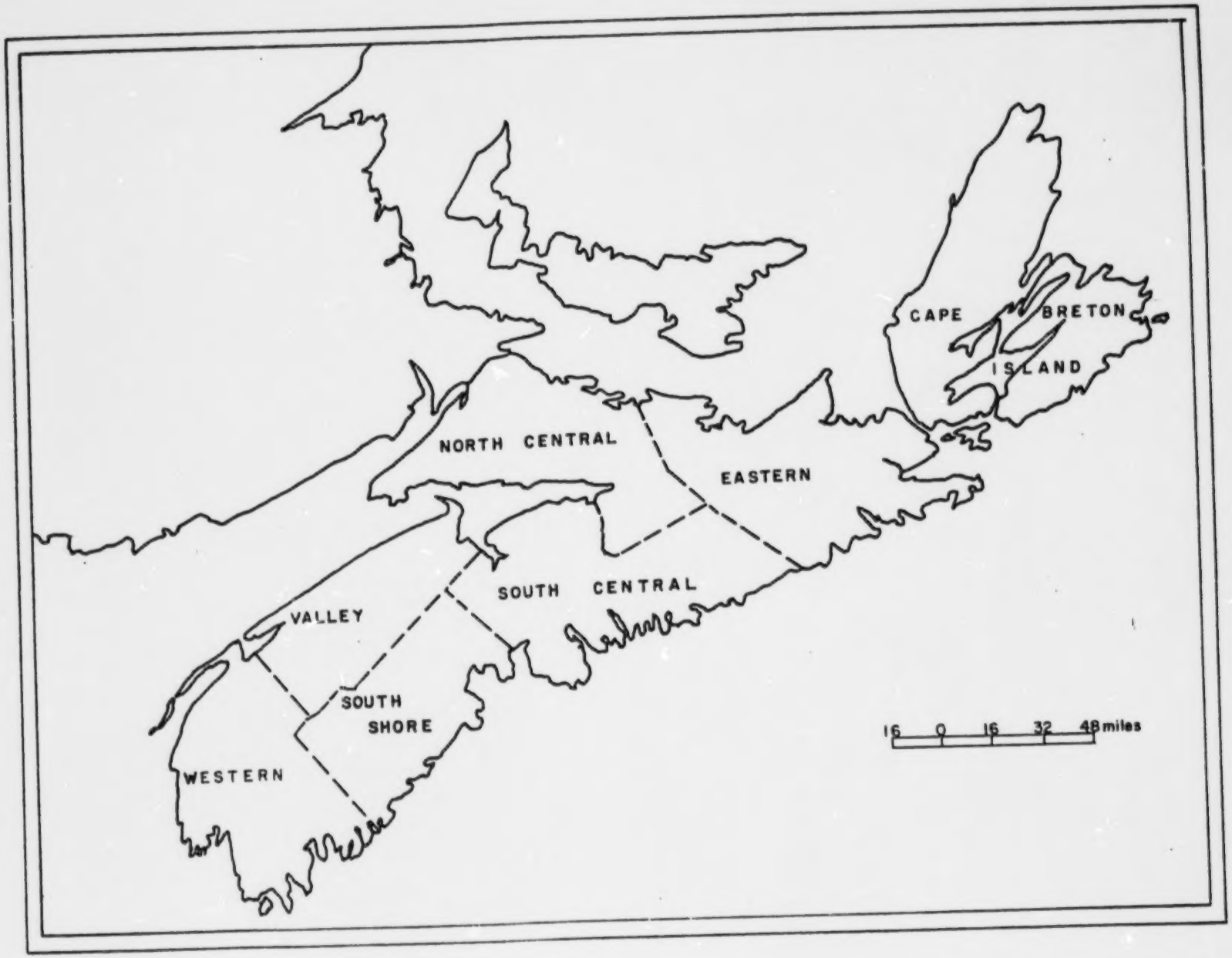
Canada B2N 5B8

Provincial Forest Nursery
P. O. Box 219, Lawrencetown, Nova Scotia
Canada BOS 1MO

Strathlorne Forest Nursery
P. O. Box 489, Inverness, Nova Scotia
Canada BOE 1NO

Wittenburg Forest Nursery
P. O. Box 250, Stewiacke, Nova Scotia
Canada BON 2JO


CAPE
BRETON
ISLAND
NORTH CENTRAL
EASTERN
SOUTH CENTRAL
VALLEY
SOUTH
SHORE
WESTERN
16 0 16 32 48 miles

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INTRODUCTION

This report is the fourth in a continuing series of informal information reports designed to document the quality characteristics and the annual distribution of stock from government operated forest nurseries. Stock quality is described in terms of seedling height, root collar diameter, shoot-root ratio and dry weight. The distribution of stock is summarized by species, stock age, stock type, land owner and subdivision.

Seedling height can be an indication of a seedling field-survival percentage. Tall seedlings may have an advantage on sites where competing vegetation or where animal damage could be a problem.

Root collar (stem) diameter is a good measure of seedling durability. Seedlings with large diameter stems usually have large root systems. Stockier trees provide better support and resistance to bending by rank vegetation, soil, debris, snow or wind.

A shoot-root ratio indicates the balance between the shoot and root of the seedling. A shoot-root ratio of 3.0 means there is three times more shoot mass than root mass. Shoot-root ratios are determined by taking the dry weights of the shoots and roots separately. Seedlings with low shoot-root ratios (2.0-3.0) often have higher field-survival potential on sites where moisture is limiting, because the absorptive capacity of their roots is more nearly matched to the transpirational demand of their shoots. Seedlings with higher shoot-

root ratios (3.0+) have higher transpirational demand and plant moisture stress increases more rapidly under droughty conditions.

Cultural operations such as seedbed density, undercutting and wrenching, transplanting, irrigating and proper fertilization management can be used to manage the size and balance of the seedlings.

Reference is made to the General Development Agreement (GDA), under this agreement private woodlot owners, either individually or in group ventures, upon entering into a ten year contract with the Government of Nova Scotia, receive technical and financial assistance for forest management on their lands. This federal-provincial subsidiary agreement is funded partly by DREE and the province of Nova Scotia and is due for renewal in the spring of 1982.

METHODS

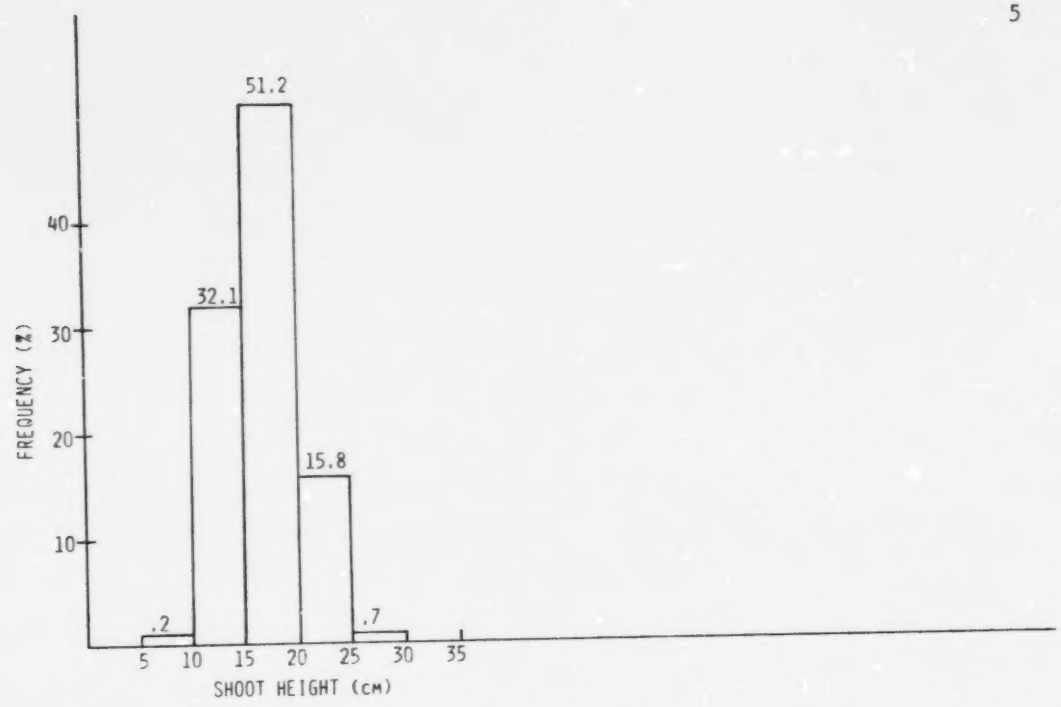
During the spring lift two or more random 25 seedling samples, per stock lot number, were selected daily from the sorting tables. Shoot height, root collar diameter, shoot/root ratio and mean seedling dry weight were determined. Shoot height was measured to the nearest millimeter (from root collar to terminal bud). The root collar diameter was measured to the nearest tenth millimeter. The shoot/root ratio was derived by dividing the dry shoot weight by the dry root weight. The mean seedling dry weight was similarly calculated by dividing the total weight of the shoots and roots by the sample size.

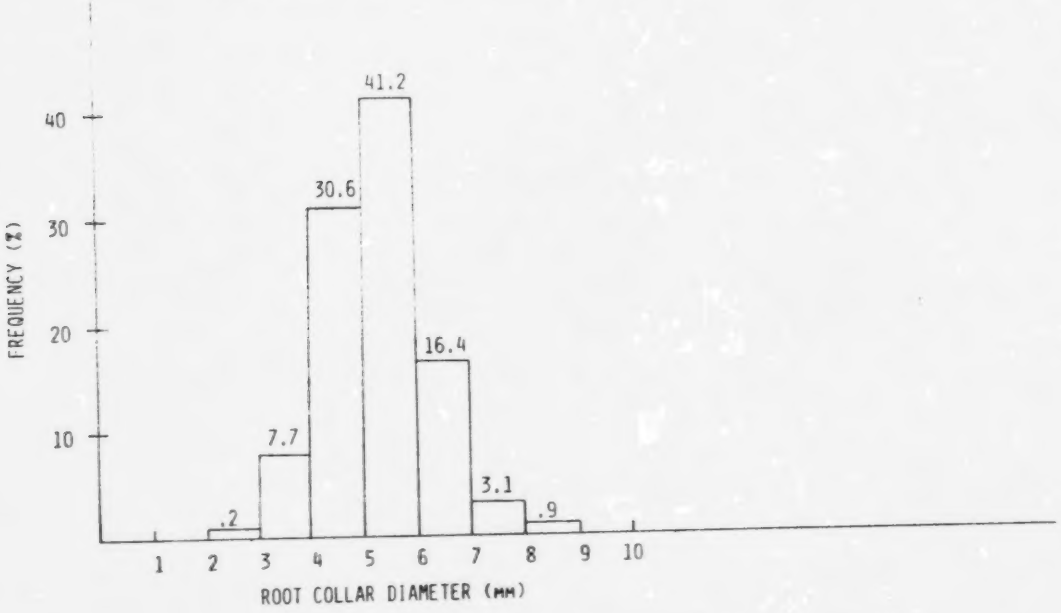
STOCK SIZE CLASS DISTRIBUTION(%)

SHOOT HEIGHT(cm)		ROOT COLLAR DIAMETER(mm)	
5.1 - 10.0		1.1 - 2.0	
10.1 - 15.0	4	2.1 - 3.0	
15.1 - 20.0	18	3.1 - 4.0	
20.1 - 25.0	34	4.1 - 5.0	
25.1 - 30.0	14	5.1 - 6.0	8
30.1 - 35.0	20	6.1 - 7.0	8
35.1 - 40.0	8	7.1 - 8.0	12
40.1 - 45.0	2	8.1 - 9.0	16
45.1+		9.1 - 10.0	22
		10.1 - 11.0	16
		11.1 - 12.0	4
		12.1+	14

	Mean	Range of sample means
Diameter(mm)	9.3	8.4 - 10.1
Shoot Height(cm)	25.3	24.2 - 26.4
Shoot/Root(ODW)	2.37	2.09 - 2.65
Seedling Dry Weight(g)	36.05	30.45 - 41.64
Sample Size	50	

Figure 1. Red pine 2/2, stock lot EKA281.





	Mean	Range of sample means
Diameter(mm)	5.3	4.2 - 6.1
Shoot Height(cm)	17.1	13.6 - 20.2
Shoot/Root(ODW)	2.35	1.61 - 3.03
Seedling Dry Weight(g)	10.26	5.85 - 12.69
Sample Size	549	

Figure 2. Red pine 2/1, stock lots LO7A281, A11A281, A11A381, A12A481.

ROOT COLLAR DIAMETER(mm)

Stock Lot No.	Sample Size	Mean	Range of sample means
LO7A281	100	5.5	5.3 - 5.7
A11A281	99	5.2	4.8 - 5.5
A11A381	200	5.2	4.2 - 5.8
A12A481	150	5.3	4.9 - 6.1

SHOOT HEIGHT(cm)

LO7A281	17.6	17.2 - 18.4
A11A281	19.1	18.2 - 20.2
A11A381	15.9	13.9 - 17.1
A12A481	15.7	13.6 - 18.3

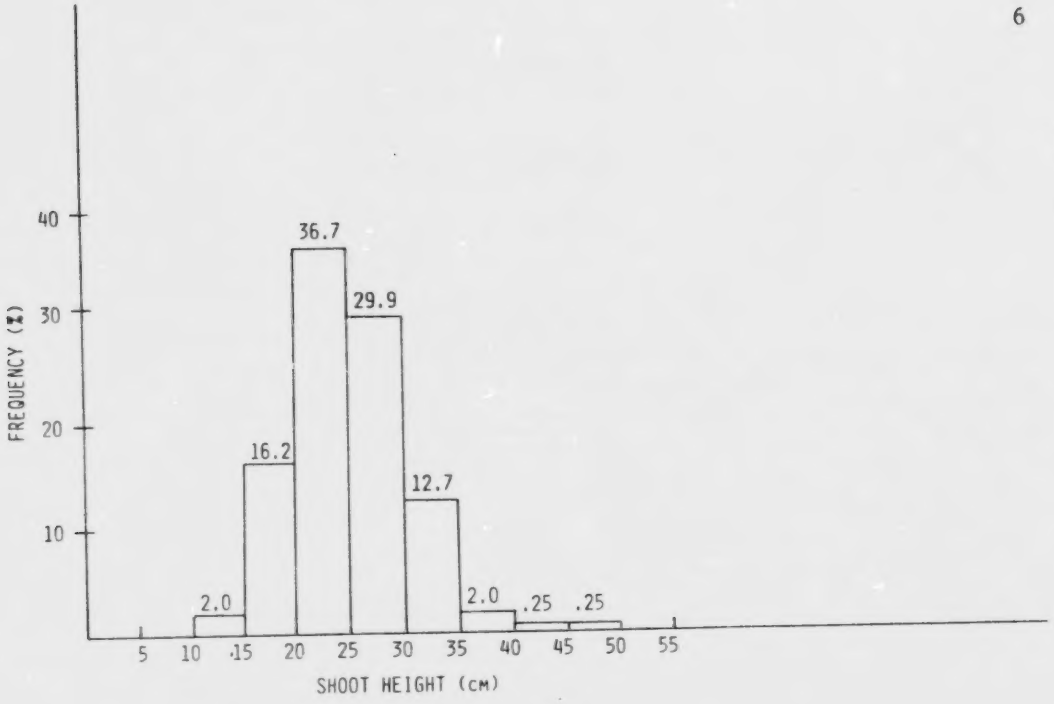
SHOOT/ROOT(ODW)

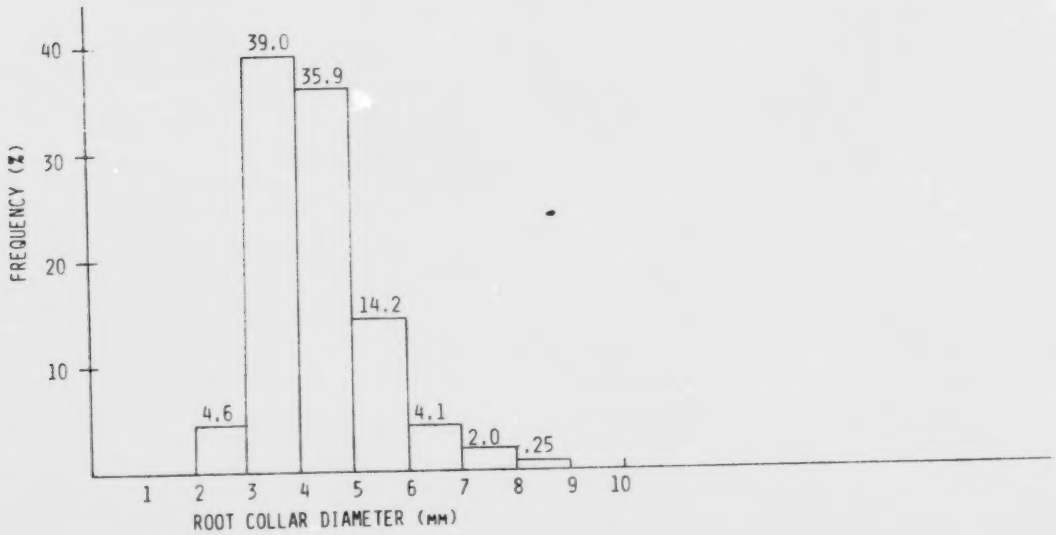
LO7A281	2.67	2.45 - 2.77
A11A281	2.80	2.62 - 3.03
A11A381	2.09	1.75 - 2.48
A12A481	1.85	1.61 - 2.30

SEEDLING DRY WEIGHT(grams)

LO7A281	10.62	9.59 - 12.05
A11A281	9.91	8.07 - 11.01
A11A381	10.17	5.85 - 12.69
A12A481	10.33	8.53 - 10.65

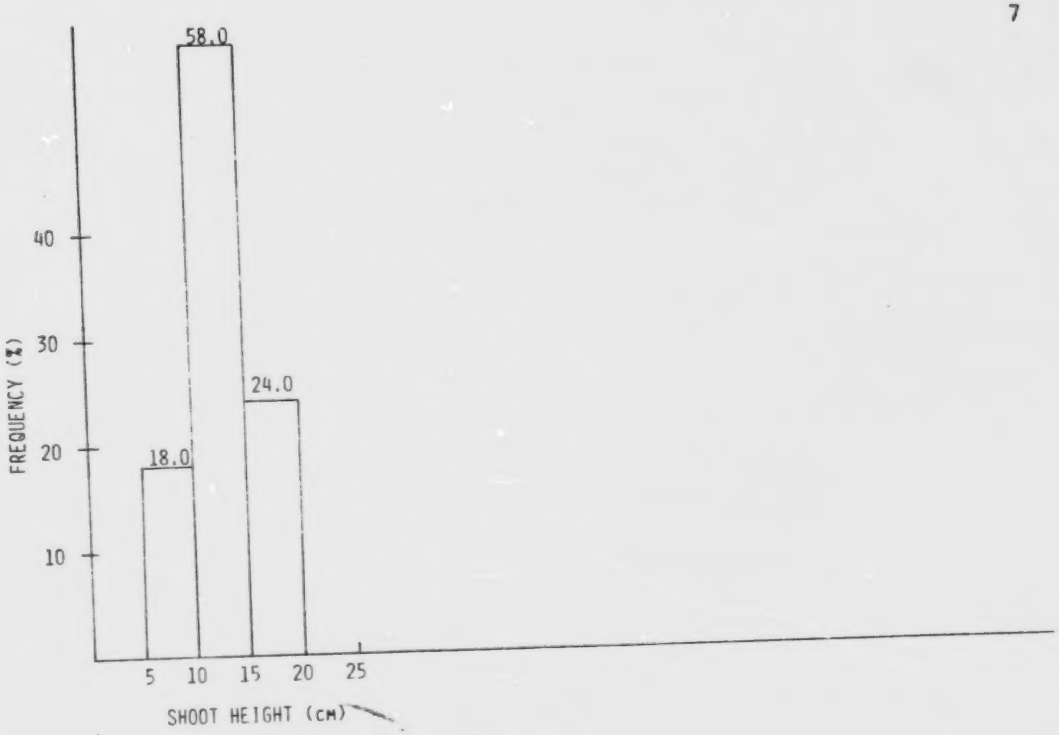
Figure 2 (continued). Data for individual stock lots of red pine 2/1.

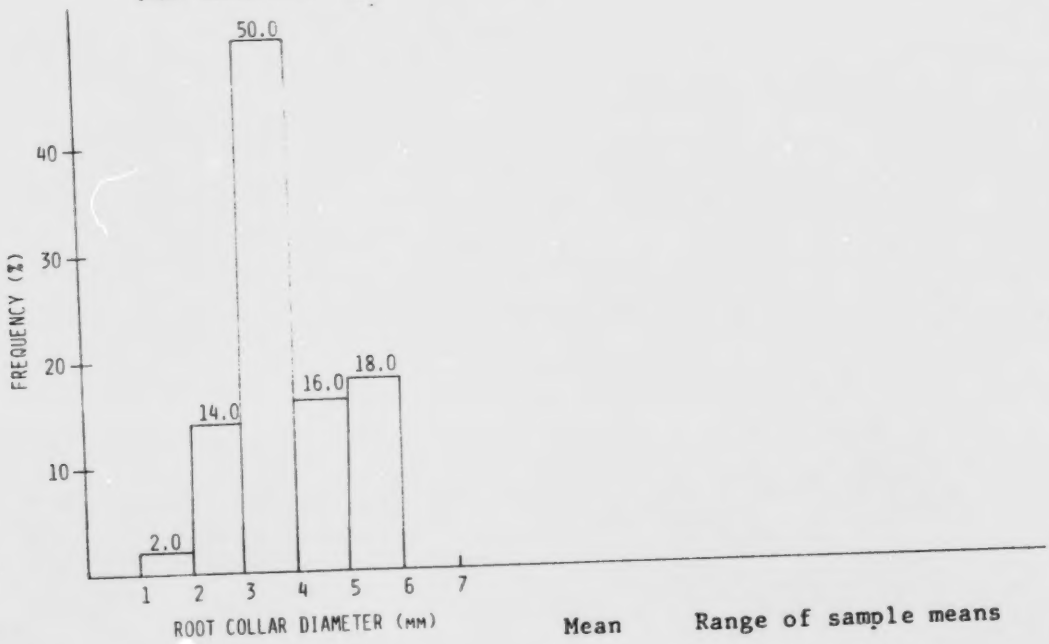




	Mean	Range of sample means
Diameter(mm)	4.3	3.6 - 4.7
Shoot Height(cm)	24.7	19.1 - 29.7
Shoot/Root(ODW)	5.44	5.01 - 6.18
Seedling Dry Weight(g)	6.08	4.21 - 7.45
Sample Size	395	

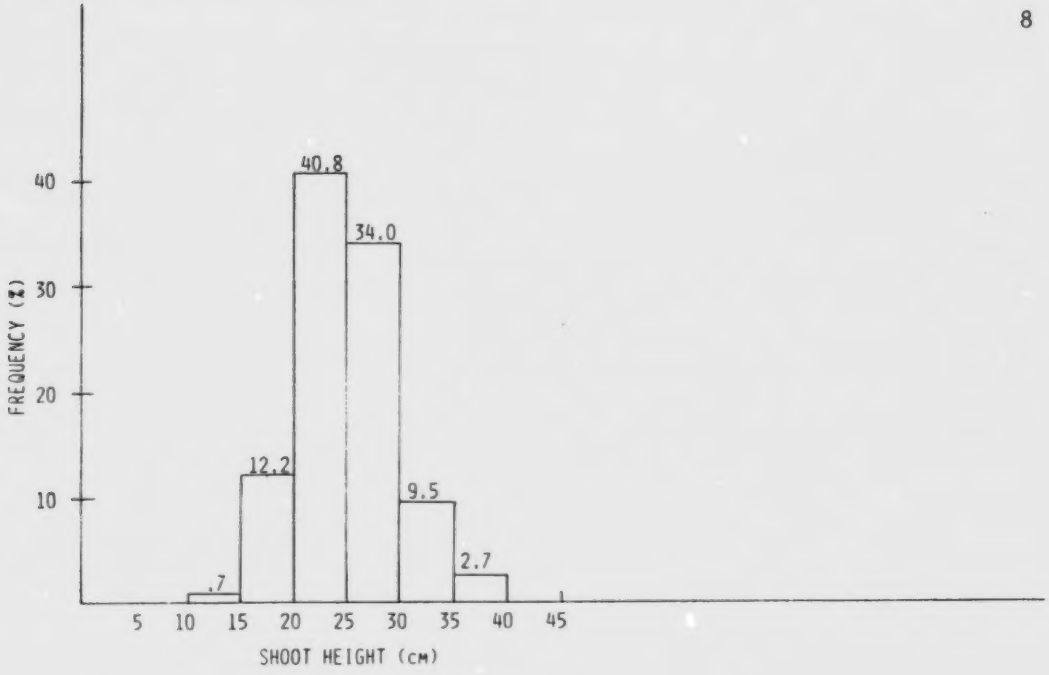
Figure 3. Red pine 3/0, stock lot E19A381.

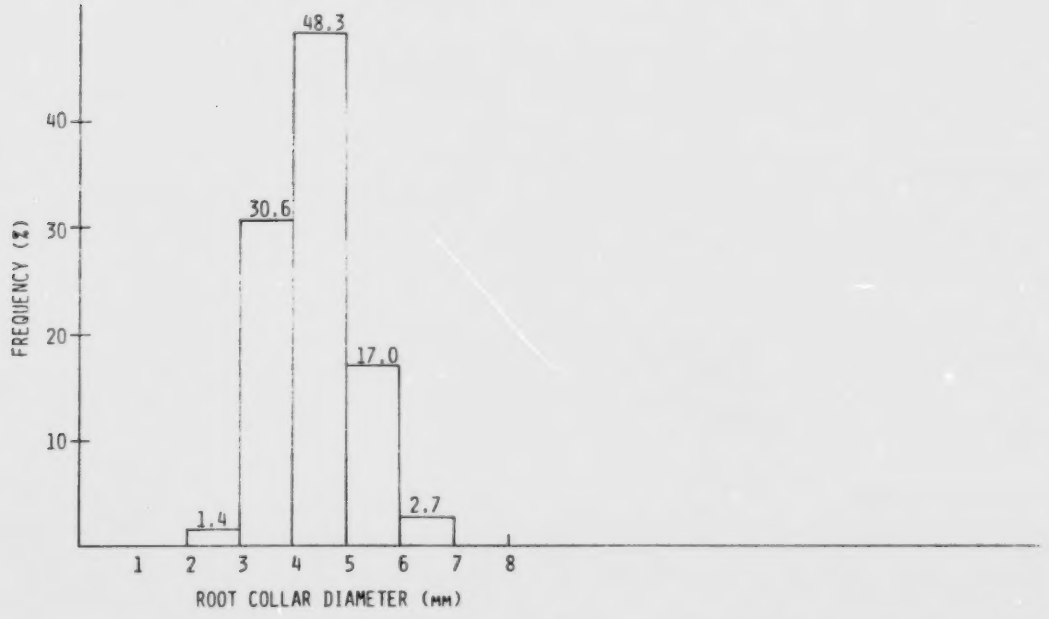




	Mean	Range of sample means
Diameter(mm)	3.8	3.5 - 4.1
Shoot Height(cm)	13.1	11.8 - 14.5
Shoot/Root(ODW)	4.28	3.80 - 4.77
Seedling Dry Weight(g)	3.80	3.07 - 4.54
Sample Size	50	

Figure 4. Red pine 2/0, stock lot E20M381.





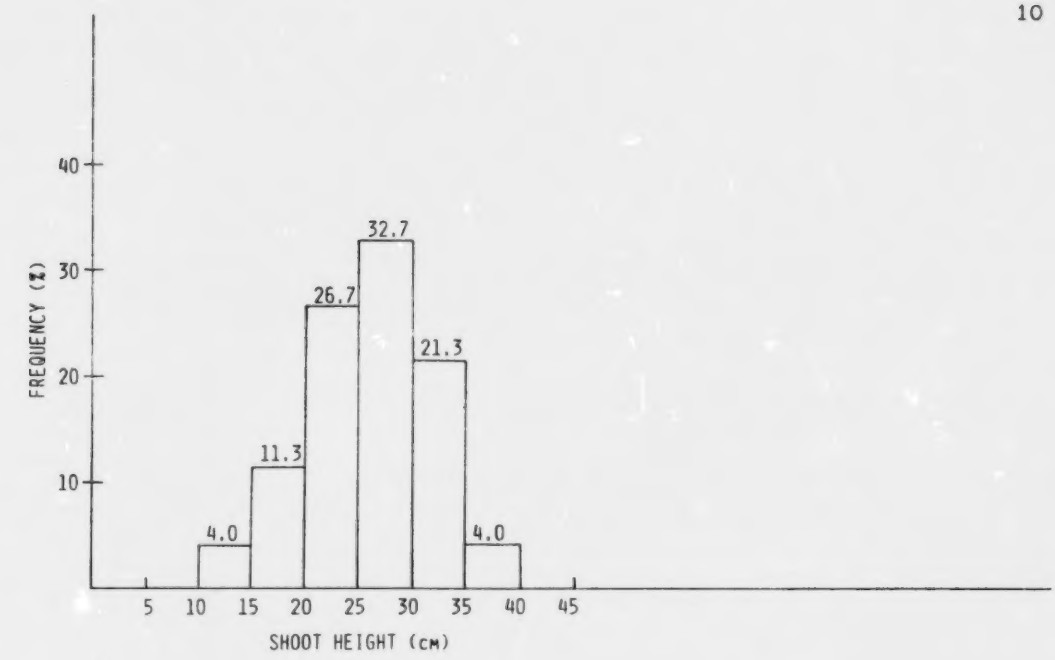
	Mean	Range of sample means
Diameter(mm)	4.4	4.2 - 4.6
Shoot Height(cm)	25.3	21.5 - 26.7
Shoot/Root(ODW)	4.89	4.34 - 5.85
Seedling Dry Weight(g)	5.57	5.09 - 6.22
Sample Size	147	

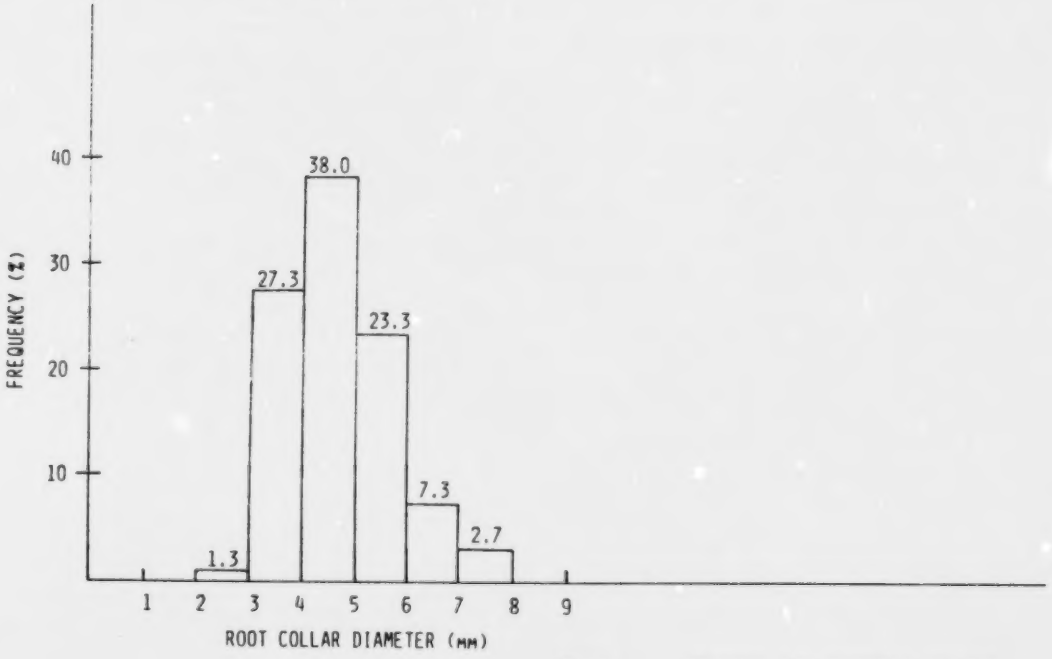
Figure 5. White pine 3/0, stock lot E17A281.

STOCK SIZE CLASS DISTRIBUTION(%)	
SHOOT HEIGHT(cm)	ROOT COLLAR DIAMETER(mm)
5.1 - 10.0	1.1 - 2.0
10.1 - 15.0 - 69.1	2.1 - 3.0 - 1.1
15.1 - 20.0 - 30.9	3.1 - 4.0 - 20.6
20.1 - 25.0	4.1 - 5.0 - 35.4
25.1 - 30.0	5.1 - 6.0 - 34.3
30.1 - 35.0	6.1 - 7.0 .6
35.1 - 40.0	7.1 - 8.0
40.1 - 45.0	8.1 - 9.0
45.1+	9.1 - 10.0
	10.1 - 11.0
	11.1 - 12.0
	12.1+

	Mean	Range of sample means
Diameter(mm)	3.8	2.6 - 4.4
Shoot Height(cm)	9.2	7.8 - 10.1
Shoot/Root(ODW)	1.87	1.58 - 2.38
Seedling Dry Weight(g)	4.16	2.38 - 5.91
Sample Size	175	

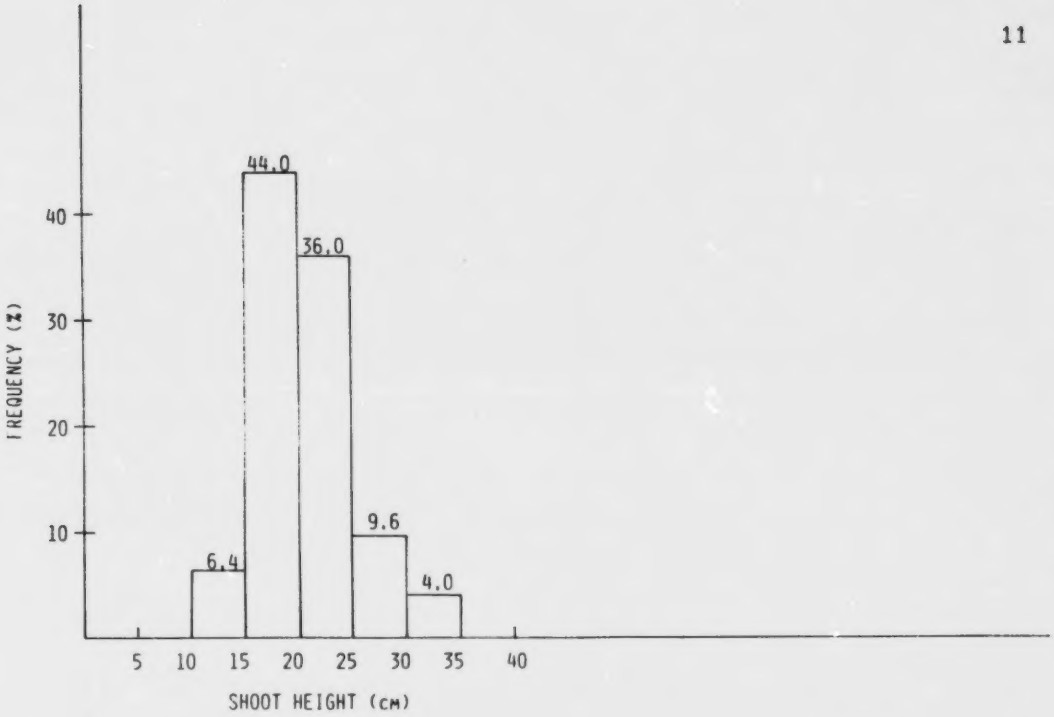
Figure 6. White pine 2/0, stock lot LO2A481.

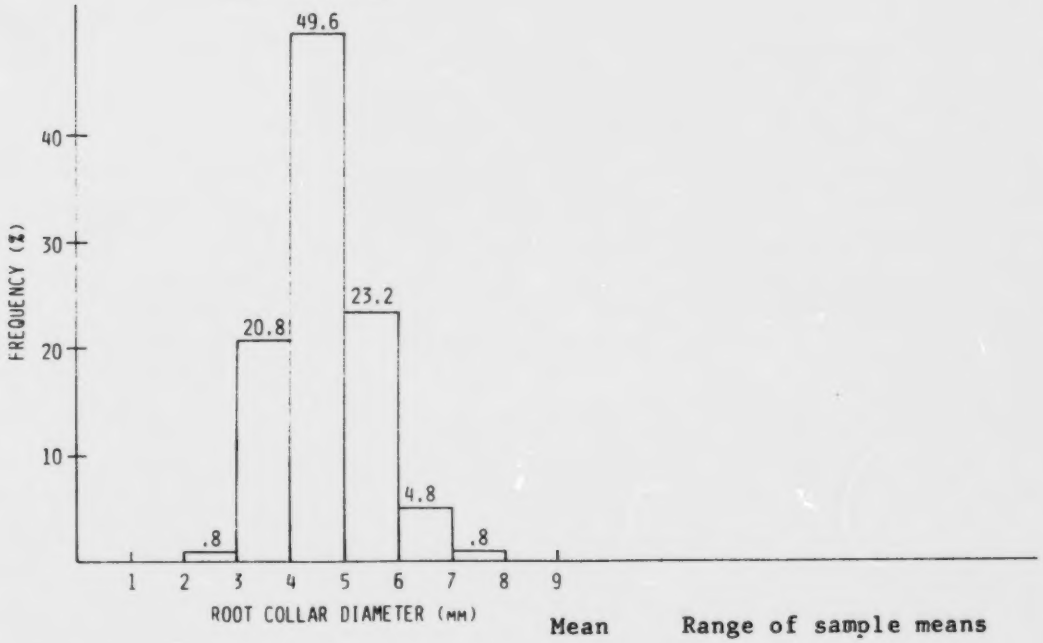




	Mean	Range of sample means
Diameter(mm)	4.7	4.0 - 5.3
Shoot Height(cm)	25.9	20.1 - 30.2
Shoot/Root(ODW)	3.80	2.97 - 5.01
Seedling Dry Weight(g)	5.74	4.24 - 7.37
Sample Size	150	

Figure 7. Jack pine 2/0, stock lot E20A381.





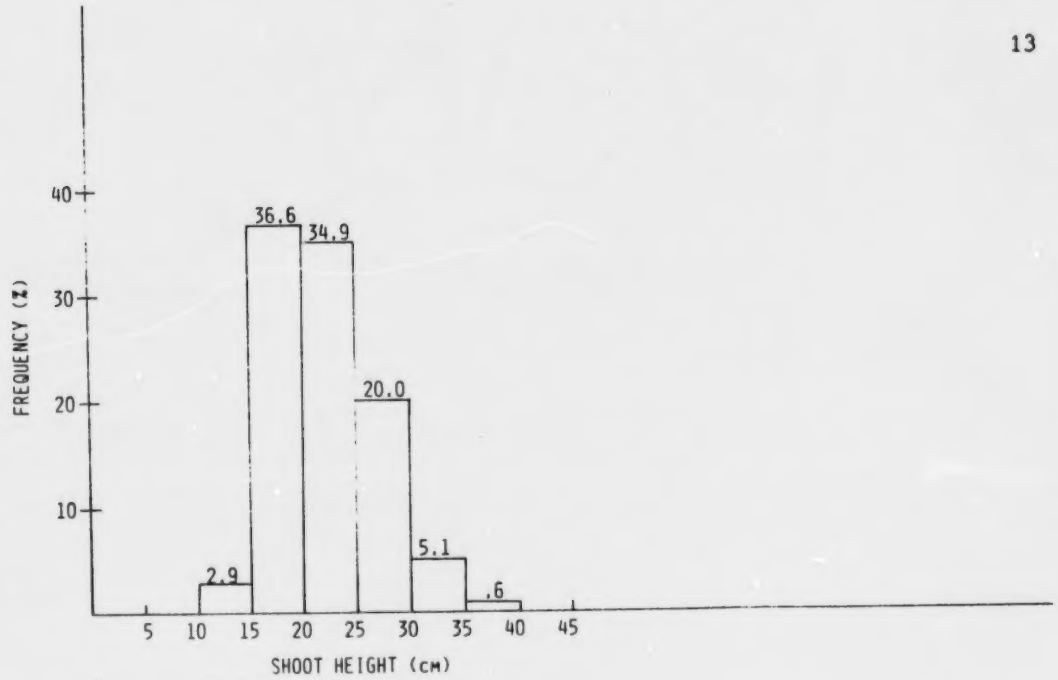
	Mean	Range of sample means
Diameter(mm)	4.6	4.2 - 5.1
Shoot Height(cm)	20.5	18.5 - 21.8
Shoot/Root(ODW)	1.73	1.59 - 2.11
Seedling Dry Weight(g)	7.48	6.68 - 9.05
Sample Size	125	

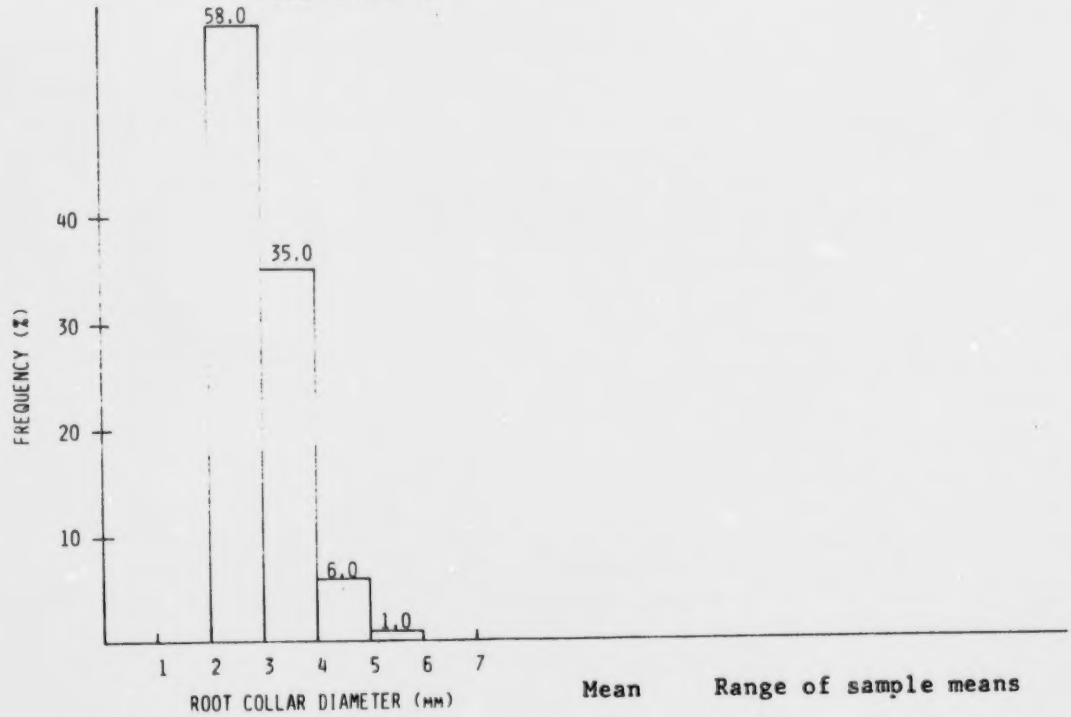
Figure 8. Norway spruce 2/1, stock lot A1OM181.

STOCK SIZE CLASS DISTRIBUTION(%)	
SHOOT HEIGHT(cm)	ROOT COLLAR DIAMETER(mm)
5.1 - 10.0	1.1 - 2.0
10.1 - 15.0 - 2	2.1 - 3.0 - 20
15.1 - 20.0 - 14	3.1 - 4.0 - 46
20.1 - 25.0 - 28	4.1 - 5.0 - 24
25.1 - 30.0 - 28	5.1 - 6.0 - 8
30.1 - 35.0 - 18	6.1 - 7.0 - 2
35.1 - 40.0 - 10	7.1 - 8.0
40.1 - 45.0	8.1 - 9.0
45.1+	9.1 - 10.0
	10.1 - 11.0
	11.1 - 12.0
	12.1+

	Mean	Range of sample means
Diameter(mm)	3.8	3.7 - 3.9
Shoot Height(cm)	26.2	24.6 - 27.8
Shoot/Root(ODW)	3.75	3.40 - 4.09
Seedling Dry Weight(g)	5.36	5.16 - 5.55
Sample Size	50	

Figure 9. Norway spruce 3/0, stock lots E19A481 and E19M181.





	Mean	Range of sample means
Diameter(mm)	3.2	2.7 - 3.8
Shoot Height(cm)	21.6	18.0 - 25.7
Shoot/Root(ODW)	3.54	2.47 - 4.97
Seedling Dry Weight(g)	3.28	2.25 - 3.96
Sample Size	200	

Figure 10. Norway spruce 2/0, stock lots E20A481, E20M281 and E20M481.

ROOT COLLAR DIAMETER(mm)

Stock Lot No.	Sample Size	Mean	Range of sample means
E20A481	100	2.8	2.7 - 2.9
E20M281	75	3.1	2.8 - 3.2
E20M481	25	3.8	

SHOOT HEIGHT(cm)

E20A481	20.1	18.0 - 21.6
E20M281	24.2	22.8 - 25.7
E20M481	20.4	

SHOOT/ROOT(ODW)

E20A481	2.77	2.47 - 3.02
E20M281	4.36	3.80 - 4.97
E20M481	3.50	

SEEDLING DRY WEIGHT(grams)

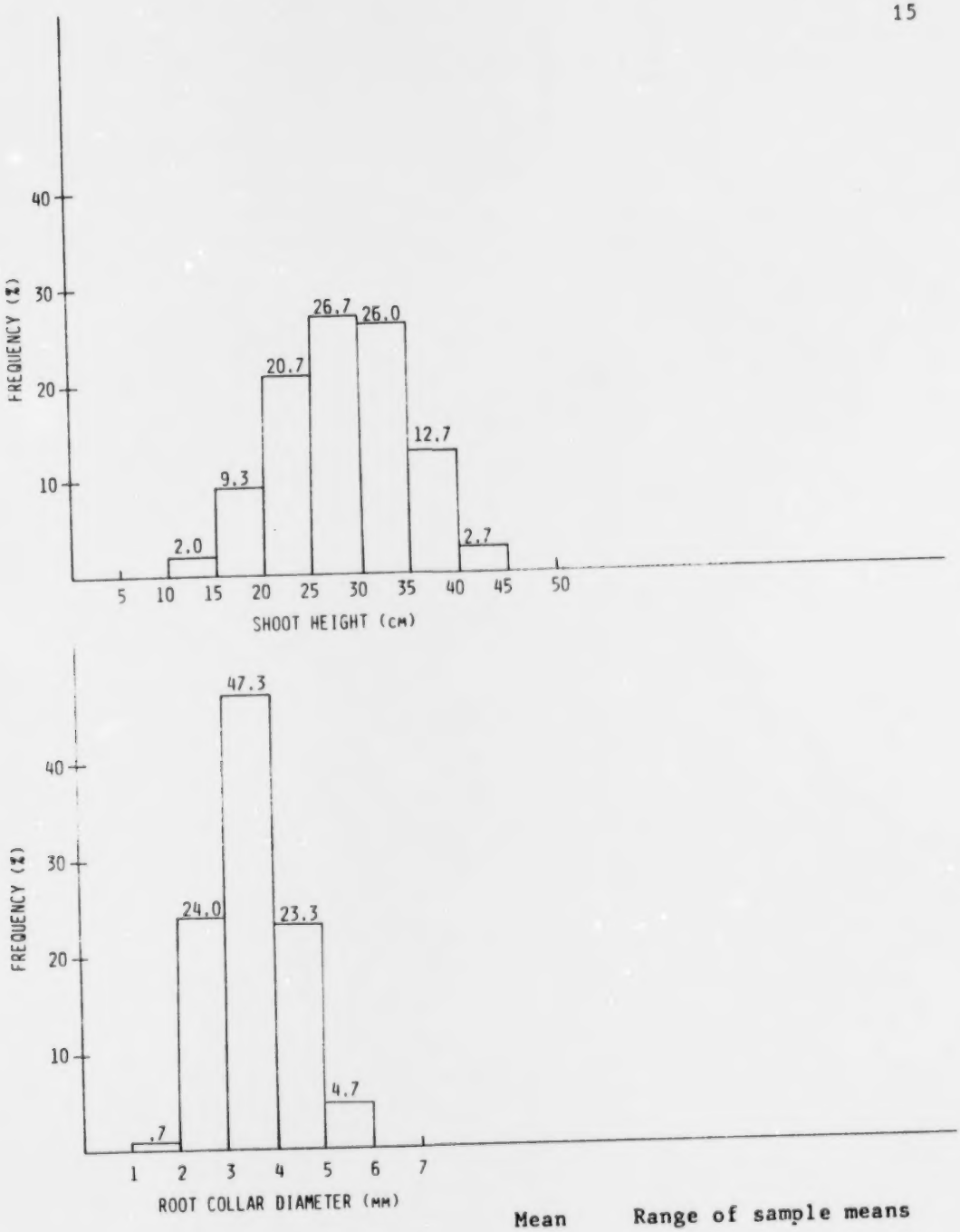
E20A481	2.53	2.25 - 2.81
E20M281	3.34	2.47 - 3.95
E20M481	3.96	

Figure 10(continued). Data for individual stock lots of Norway spruce 2/0.

STOCK SIZE CLASS DISTRIBUTION(%)			
SHOOT HEIGHT(cm)		ROOT COLLAR DIAMETER(mm)	
5.1 - 10.0		1.1 - 2.0	
10.1 - 15.0		2.1 - 3.0	20
15.1 - 20.0	8	3.1 - 4.0	32
20.1 - 25.0	24	4.1 - 5.0	40
25.1 - 30.0	44	5.1 - 6.0	4
30.1 - 35.0	20	6.1 - 7.0	4
35.1 - 40.0	4	7.1 - 8.0	
40.1 - 45.0		8.1 - 9.0	
45.1+		9.1 - 10.0	
		10.1 - 11.0	
		11.1 - 12.0	
		12.1+	

	Mean	Range of sample means
Diameter(mm)	3.9	
Shoot Height(cm)	26.8	
Shoot/Root(ODW)	2.83	
Seedling Dry Weight(g)	6.81	
Sample Size	25	

Figure 11. Black spruce 2/1, stock lot A1OM181.



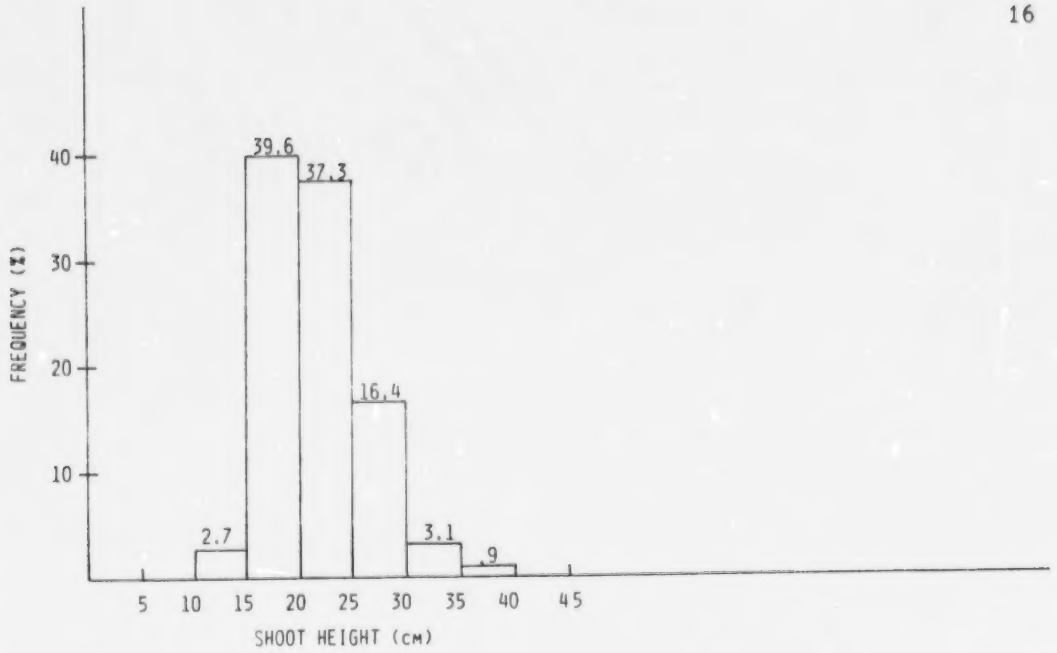
	Mean	Range of sample means
Diameter(mm)	3.6	3.4 - 3.7
Shoot Height(cm)	25.9	21.0 - 34.7
Shoot/Root(ODW)	4.80	3.50 - 5.53
Seedling Dry Weight(g)	4.35	3.91 - 5.01
Sample Size	150	

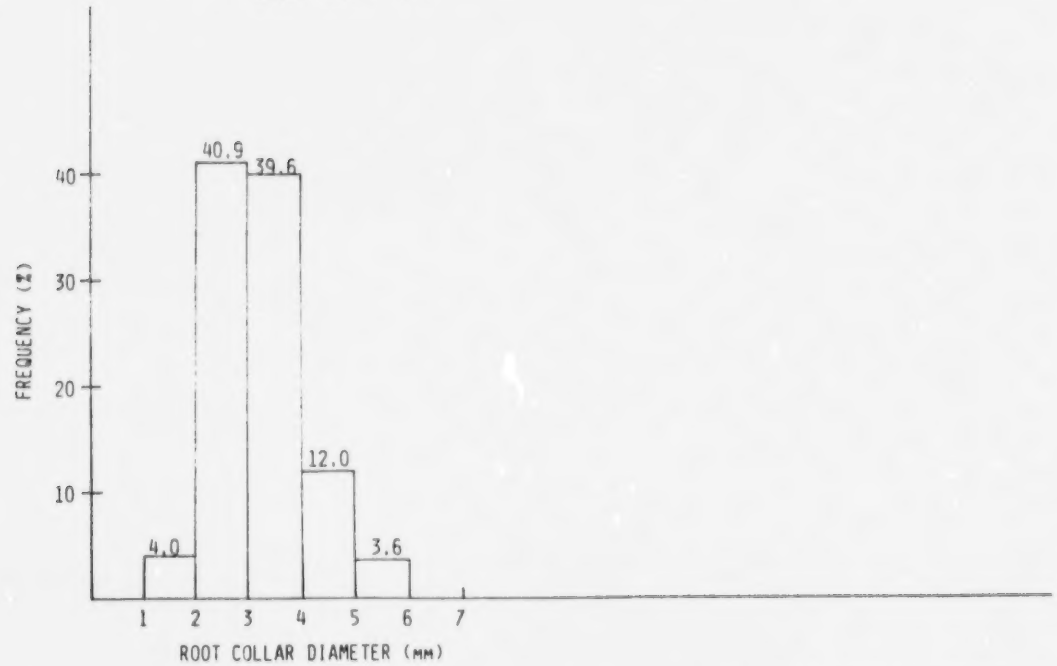
Figure 12. Black spruce 2/0, stock lots E15A581, E20M281 and E20M381.

ROOT COLLAR DIAMETER(mm)

Stock Lot No.	Sample Size	Mean	Range of sample means
E15A581	100	3.5	3.4 - 3.6
E20M281	25	3.6	
E20M381	25	3.7	
		SHOOT HEIGHT(cm)	
E15A581		30.6	28.3 - 34.7
E20M281		21.0	
E20M381		26.0	
		SHOOT/ROOT(ODW)	
E15A581		4.57	3.50 - 5.53
E20M281		4.49	
E20M381		5.35	
		SEEDLING DRY WEIGHT(grams)	
E15A581		4.61	4.17 - 5.01
E20M281		3.91	
E20M381		4.53	

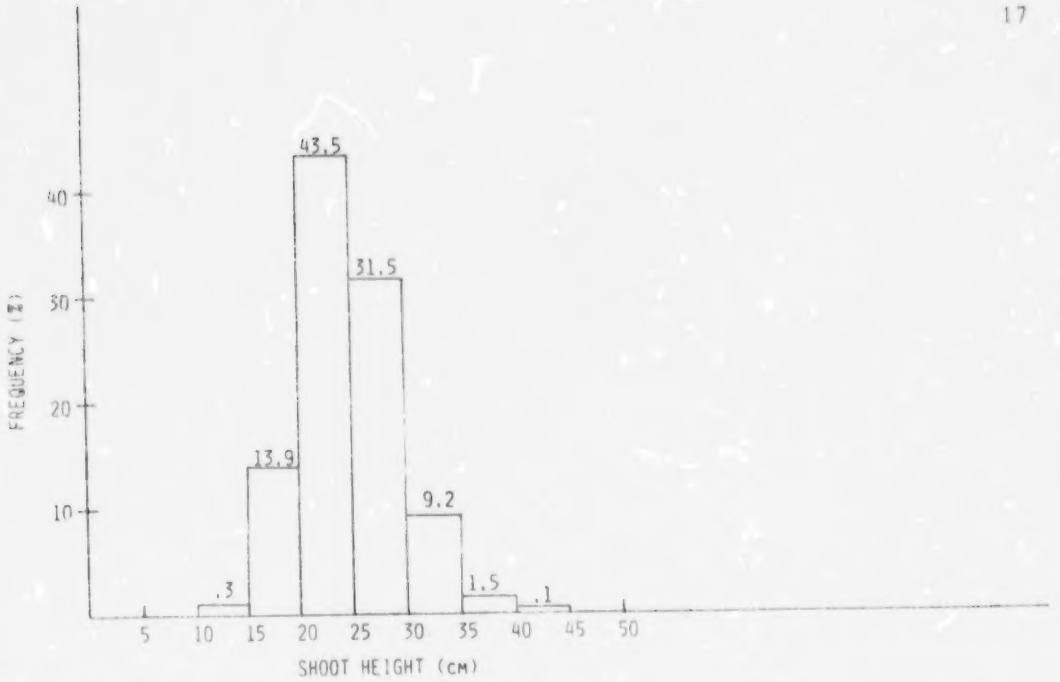
Figure 12 (continued). Data for individual stock lots of black spruce 2/0.

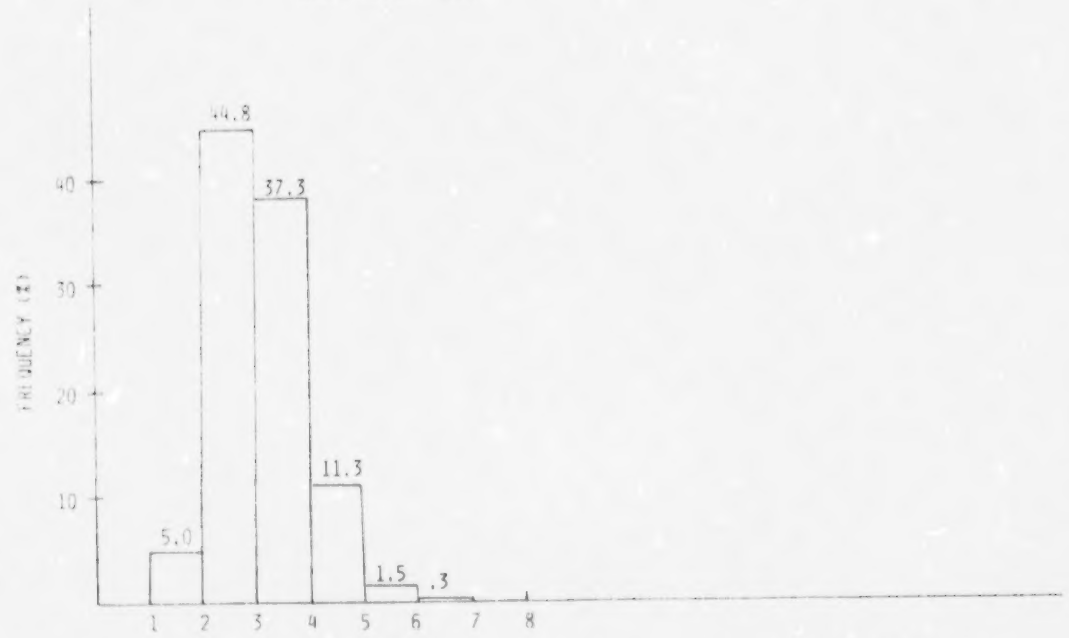




	Mean	Range of sample means
Diameter(mm)	3.4	2.8 - 3.9
Shoot Height(cm)	21.5	19.6 - 25.8
Shoot/Root(ODW)	4.10	2.90 - 5.05
Seedling Dry Weight(g)	3.18	1.98 - 4.36
Sample Size	225	

Figure 13. White spruce 2/0, stock lot LO2A581.





	Mean	Range of sample means
Diameter(mm)	3.0	2.3 - 3.7
Shoot Height(cm)	24.4	22.4 - 29.3
Shoot/Root(ODW)	5.17	3.51 - 7.59
Seedling Dry Weight(g)	3.42	1.87 - 5.17
Sample Size	674	

Figure 14. Red spruce 2/0, stock lots E20A181, E20A281, L02A581, and E15M281.

ROOT COLLAR DIAMETER(mm)

Stock Lot No.	Sample Size	Mean	Range of sample means
E20A181	150	3.0	2.4 - 3.6
E20A281	124	3.0	2.3 - 3.7
LO2A581	350	3.3	2.8 - 3.7
E15M281	50	2.9	2.7 - 3.2

SHOOT HEIGHT(cm)

E20A181	24.5	22.9 - 28.4
E20A281	24.5	22.6 - 26.0
LO2A581	25.3	22.8 - 29.3
E15M281	23.1	22.4 - 23.7

SHOOT/ROOT(ODW)

E20A181	5.60	4.39 - 7.59
E20A281	5.86	4.97 - 7.40
LO2A581	4.74	3.51 - 7.53
E15M281	4.47	3.97 - 4.98

SEEDLING DRY WEIGHT(grams)

E20A181	2.97	1.87 - 3.65
E20A281	3.22	1.89 - 4.86
LO2A581	4.24	3.11 - 5.17
E15M281	3.26	2.69 - 3.82

Figure 14(continued). Data for individual stock lots of red spruce 2/0.

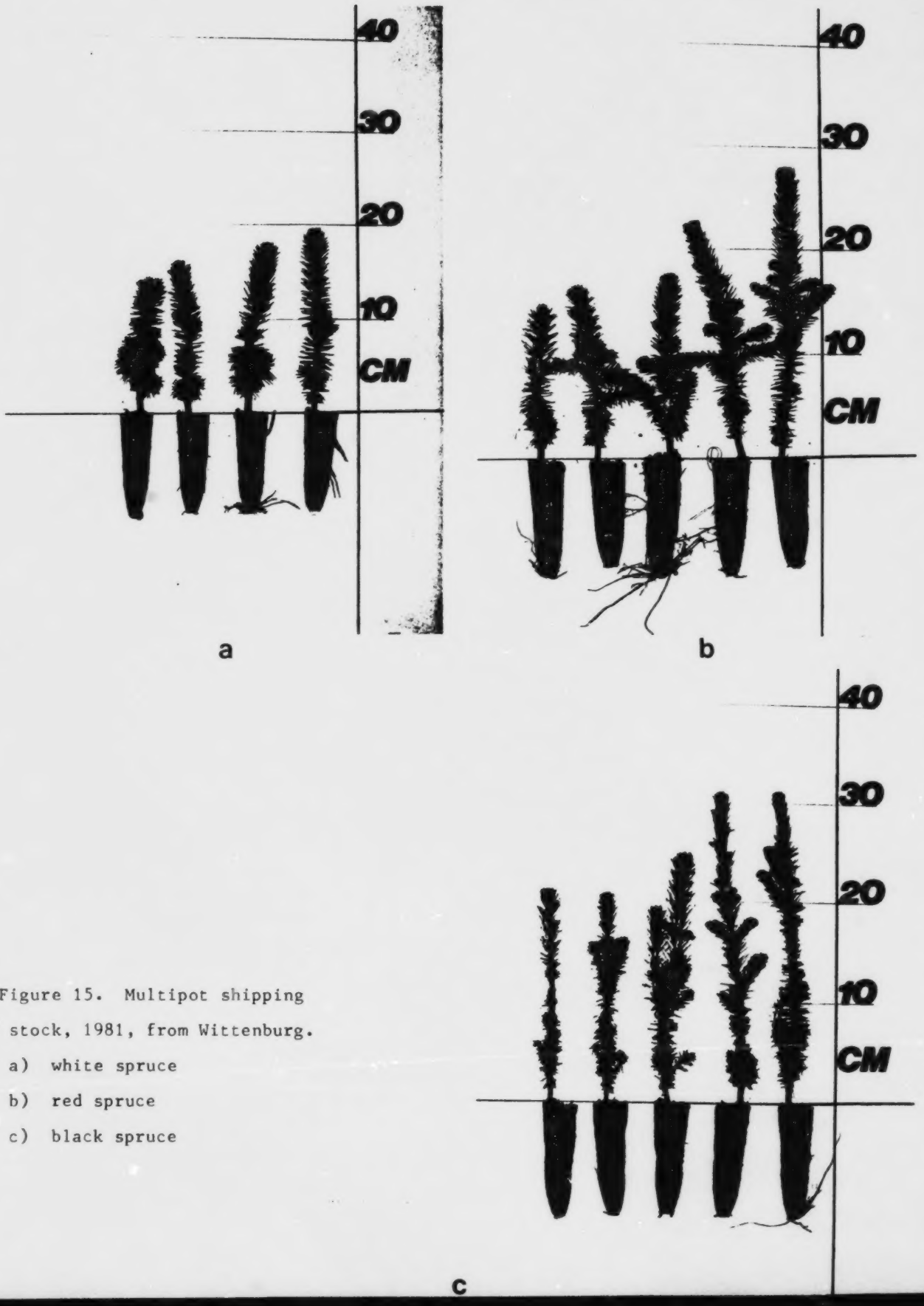


Figure 15. Multipot shipping stock, 1981, from Wittenburg.

a) white spruce

b) red spruce

c) black spruce

Table A. White spruce multipots, Wittenburg, 1981.

	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
RCD(mm)		2.7	2.7		
SHT(cm)		9.1	22.3		
S/R		1.48	-		
MSDW(g)		1.40	-		
Sample size		50	50		
Size Class Distribution(%)					
Shoot Height					
≤ 20.0 cm		100	32		
20.1-25.0		-	28		
25.1-30.0		-	36		
30.1-35.0		-	4		
35.1+		-	-		
Root Collar Diameter					
≤ 2.0 mm		4	8		
2.1-3.0		72	74		
3.1-4.0		24	18		
4.1-5.0		-	-		
5.1+		-	-		

Grades 1 and 2 seeded December 1979.

Grade 3 seeded spring 1980.

Grade 1. No data available. Spring graded stock with a 15 cm top or better.

Grade 2. Spring graded stock with less than a 15 cm top.

Grade 3. Stock winter flushed in the greenhouse 1981.

Table B. Red spruce multipots, Wittenburg, 1981.

	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
RCD(mm)	2.6	2.4	3.3	2.6	2.6
SHT(cm)	15.1	9.9	27.6	28.2	23.9
S/R	1.24	.78	.82	1.33	1.44
MSDW(g)	2.19	1.47	5.33	5.97	5.48
Sample size	50	50	50	50	50
Size Class Distribution(%)					
Shoot Height					
≤20.0 cm	92	100	8	4	26
20.1-25.0	8	-	16	18	30
25.1-30.0	-		54	52	40
30.0-35.0	-	-	20	26	4
35.1+	-	-	2	-	-
Root Collar Diameter					
≤2.0 mm	6	14	-	16	12
2.1-3.0	90	84	26	72	72
3.0-4.0	4	2	64	10	16
4.1-5.0	-	-	10	2	-
5.1+	-	-	-	-	-

Grades 1,2 and 3 seeded December 1979.

Grades 4 and 5 seeded January 1981.

Grade 1. Spring graded stock with a 15 cm top or better.

Grade 2. Spring graded stock with less than 15 cm top.

Grade 3. Spring graded stock with less than 15 cm top and shipped in fall of 1981.

Grade 4. Non-graded, soluble fertilized. Shipped in the fall of 1981.

Grade 5. Non-graded, osmocote fertilized. Shippped in the fall of 1981.

Table C. Black spruce multipots, Wittenburg 1981.

	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
RCD(mm)	2.7	2.3	2.8	3.6	
SHT(cm)	23.5	14.6	24.2	37.5	
S/R	3.14	2.28	2.26	1.14	
MSDW(g)	2.46	1.32	3.33	5.39	
Sample size	50	50	50	50	
Size Class Distribution(%)					
Shoot Height					
≤20.0 cm	8	100	6	–	
20.1-25.0	64	–	52	2	
25.1-30.0	28	–	40	6	
30.1-35.0	–	–	2	18	
35.1+	–	–	–	74	
Root Collar Diameter					
≤20.0 cm	2	26	2	2	
2.1-3.0	80	72	68	8	
3.1-4.0	18	2	30	70	
4.1-5.0	–	–	–	18	
5.1+	–	–	–	2	

All grades seeded December 1979.

Grade 1. Spring graded stock with 20 cm top or better.

Grade 2. Spring graded stock with less than 20 cm top.

Grade 3. Not graded.

Grade 4. Spring graded stock with less than 20 cm top and shipped in the fall of 1981.

Table 1. Summary of stock distribution to Crown lands, 1981

	wP3/0	rP3/0	bS3/0	NS3/0	rP2/1	jP2/0	bS2/0	rS2/0	NS2/0	bS(mp)	rS(mp)	Totals
Cape Breton North												
Cape Breton South												
Eastern				2,500						7,000		9,500
North Central		147,600	1,000	96,700	6,000	66,800		8,000	97,000	142,249	41,250	606,599
South Central		49,000									159,087	208,087
South Shore	5,000	10,000			15,000				23,000			53,000
Valley			8,600		14,800		6,300		21,500		54,080	105,280
Western		353,500					4,000				45,494	402,994
TOTALS	5,000	560,100	9,600	99,200	35,800	66,800	10,300	8,000	141,500	149,249	299,911	1,385,460

Bareroot totals - 936,300
Container totals - 449,160

Table 2a. Summary of 2/0 stock distribution to private lands under General Development Agreement (GDA), 1981.

Subdivision	wP2/0	jP2/0	wS2/0	bS2/0	rS2/0	NS2/0	TOTALS
Cape Breton North			3,000	4,000	40,100		47,100
Cape Breton South		1,500		1,500	500	1,500	5,000
Eastern			190,000	124,000	162,000		476,000
North Central		9,000	106,750	56,750	86,500	100,500	359,500
South Central		2,000	7,700	16,200	83,600	29,700	139,200
South Shore			2,500	10,000	43,500	2,400	58,400
Valley	1,000		38,500	1,500	48,175	6,775	95,950
Western		5,100		11,500	57,400	11,100	85,100
TOTALS	1,000	17,600	348,450	225,400	521,775	151,975	1,266,250

Table 2b. Summary of 3+0 stock distribution to private lands under the General Development Agreement (GDA), 1981.

Subdivision	wP3/0	rP3/0	wS3/0	bS3/0	rS3/0	NS3/0	TOTALS
Cape Breton North	1,000	4,000					5,000
Cape Breton South	1,200	20,000	22,000	10,200			53,400
Eastern	10,500	109,600				26,000	146,100
North Central	7,700	124,300		7,000	10,000		149,000
South Central	5,000	26,400				1,000	32,400
South Shore		28,200					28,200
Valley	10,800	9,000		27,450	23,000	9,900	80,150
Western	6,100	14,000			3,000		23,100
TOTALS	42,300	335,500	22,000	44,650	36,000	36,900	517,350

Table 2c. Summary of transplant stock distribution to private lands under the General Development Agreement (GDA), 1981.

Subdivision	rS3/1	rP2/2	rP2/1	rS2/1	bS2/1	NS2/1	wS2/2	TOTALS
Cape Breton North			9,500			2,000		11,500
Cape Breton South			30,000					30,000
Eastern			9,000	10,000		6,500	5,000	30,500
North Central			31,000					31,000
South Central			12,700					12,700
South Shore			20,500					20,500
Valley	1,000		1,700	6,750	6,000			15,450
Western		6,000	23,300					29,300
TOTALS	1,000	6,000	137,700	16,750	6,000	8,500	5,000	180,950

Table 2d. Summary of multipot stock distribution to private lands under the General Development Agreement (GDA), 1981

Subdivision	wS	bS	rS	TOTALS
Cape Breton North		7,000		7,000
Cape Breton South	25,000	15,000	45,000	85,000
Eastern				
North Central	34,545	25,555	6,000	66,100
South Central		8,000		8,000
South Shore				
Valley		7,000	40,000	47,000
Western	13,000	11,000	6,500	30,500
TOTALS	72,545	73,555	97,500	243,600

Table 2e. Summary of total stock distribution to private lands under the General Development Agreement (GDA), 1981.

Subdivision	Seedlings	Transplants	Containers	Totals
Cape Breton North	52,100	11,500	7,000	70,600
Cape Breton South	58,400	30,000	85,000	173,400
Eastern	622,100	30,500		652,400
North Central	508,500	31,000	66,100	605,600
South Central	171,600	12,700	8,000	192,300
South Shore	86,600	20,500		107,100
Valley	176,100	15,450	47,000	238,550
Western	108,200	29,300	30,500	168,000
TOTALS	1,783,600	180,950	243,600	2,208,150

Table 3. Summary of stock distribution to private lands under the General Developmment Agreement (GDA) in Group Ventures, 1981*.

	wP3/0	rP3/0	bS3/0	rS3/0	wS2/0	bS2/0	rS2/0	bS(mp)	rS(mp)	Others[1]	Totals
Athol Co-oP Cumberland Co.					5,000						5,000
Baddeck Valley Woodproducers Victoria Co.	1,000	4,000				1,000	30,500	5,000			41,500
La Foret Acadienne Ltd. Digby Co.							1,900				1,900
North Mountain Woodlands Annapolis-Kings Co.	2,500		27,450				11,500	7,000	22,000	1,500	71,950
North Nova Forest Owners Cumb. Co.	7,000	14,000	7,000	10,000	34,000	13,000	42,000	17,000	6,000	17,000	167,000
Sissiboo Forest Management Digby Co.				3,000			15,000			5,000	23,000
West Pictou Forest Owners Pictou Co.		29,600			63,000		18,000				110,600
TOTALS	10,500	47,600	34,450	13,000	102,000	14,000	118,900	29,000	28,000	23,500	420,950

*These totals have been included in the subdivision summary in Table 2.

[1]Others include 17,000 wS(mp)
5,000 rP 2/2
1,500 NS 3/0

Table 4. Summary of stock distribution to private lands not under the GDA, 1981.

Subdivision	wP3/0	rP3/0	wS3/0	bS3/0	rP2/2	rP2/1	jP2/0	NS2/0	ScP(mp)	Others[1]	Totals
Cape Breton North	4,900		1,800	200		6,450	500	100			13,950
Cape Breton South	5,425		1,000	650	200	13,975	17,550	5,000			43,800
Eastern	7,350	1,000	2,600	1,800	1,000	23,950	9,700	10,625		500	58,525
North Central	5,325		3,050		5,600	29,125	1,525	11,050	2,000	3,000	60,675
South Central	16,650	3,300	1,400	2,250	1,600	35,000	7,975	13,975	9,100	10,100	101,350
South Shore	2,750	1,000	900	200	3,000	27,750	3,150	4,550	1,000	1,200	45,500
Valley	10,200	500	300	1,750	1,000	16,050	3,250	13,500		400	46,950
Western	2,450	500	1,900	500	10,200	8,500	1,050	3,500		1,000	29,600
Misc											2,000
TOTALS	55,050	6,300	12,950	7,350	22,600	160,800	44,700	62,300	12,100	18,200	402,350

[1]Others 600 rS3/0
2,000 rS2/1
500 bS2/1
1,900 wS2/0
10,000 rS2/0 (South Central)
200 wS(mp)
1,000 rS(mp)

Table 5. Summary of stock distribution to the Boy Scouts spring planting program, 1981.

County/Troop	rP2/1	jP2/0	wS2/0	bS2/0	NS2/0	TOTALS
Colchester	5,500				4,500	10,000
Cumberland	1,300				3,000	4,300
Halifax					24,000	24,000
Halifax(Sheet Harbour)	1,000					1,000
Halifax(Vanier)	5,000	5,000				10,000
Hants	3,000			4,000		7,000
Richmond(Isle Madame)	1,000					1,000
Victoria			1,000			1,000
Victoria(Keltic)	2,000	2,000				4,000
TOTALS	18,800	7,000	1,000	4,000	31,500	62,300

Table 6. Summary of stock distribution to provincial companies, 1981.

	Scott	NSFI	McLelan	Cobequid	Bowaters	Total
wP3/0	50,000	500				50,500
rP3/0			35,000	156,000	60,000	251,000
bS3/0		280,000		14,000		294,000
rS3/0	75,000					75,000
NS3/0	25,000	141,500				166,500
rP2/2	3,000					3,000
rP2/1	540,000	200,000	50,000		54,000	844,000
bS2/1	24,000					24,000
NS2/1	72,875	117,250				190,125
rP2/0	139,500					139,500
wP2/0	153,000					153,000
jP2/0	50,000	600				50,600
wS2/0		28,000		27,000		55,000
bS2/0	170,550	245,000		36,000		451,550
rS2/0	606,000			67,000		673,000
NS2/0		124,250	115,000	2,500		241,750
wS(mp)				59,655		59,655
bS(mp)		201,722		60,034		261,756
rS(mp)		70,537		99,000		169,537
NS(mp)				7,500		7,500
TOTALS	1,908,925	1,409,359	200,000	528,689	114,000	4,160,973

Table 7. Summary of bareroot and container stock distribution, 1981.

	Bareroot	Container	TOTALS
Crown	936,300	449,160	1,385,460
GDA	1,964,550	243,600	2,208,150
Private	389,050	13,300	402,350
Boy Scouts	62,300	-	62,300
Scott International	1,908,925	-	1,908,925
Bowater Mersey	114,000	-	114,000
McLelan Lumber	200,000	-	200,000
NSFI	1,137,100	272,259	1,409,359
Cobequid Lumber	302,500	226,189	528,689
Other	11,635	-	11,635
TOTALS	7,026,360	1,204,508	8,230,868

Table 8. Stock distribution by species, 1981.

Red pine	2,523,100
White pine	306,850
Jack pine	186,700
Scotch pine	12,100
Norway spruce	1,137,750
White spruce	578,700
Red spruce	1,912,073
Black spruce	1,561,960
Misc.	11,635.
	8,223,368

Number/
Numéro

2

STOCK QUALITY & DISTRIBUTION 1982

Nova Scotia

Department of
Lands and Forests

STOCK QUALITY AND DISTRIBUTION

1982

PROVINCIAL FOREST NURSERIES

Compiled by

Peter D. Neily

NOVA SCOTIA DEPARTMENT OF LANDS AND FORESTS

April 1982

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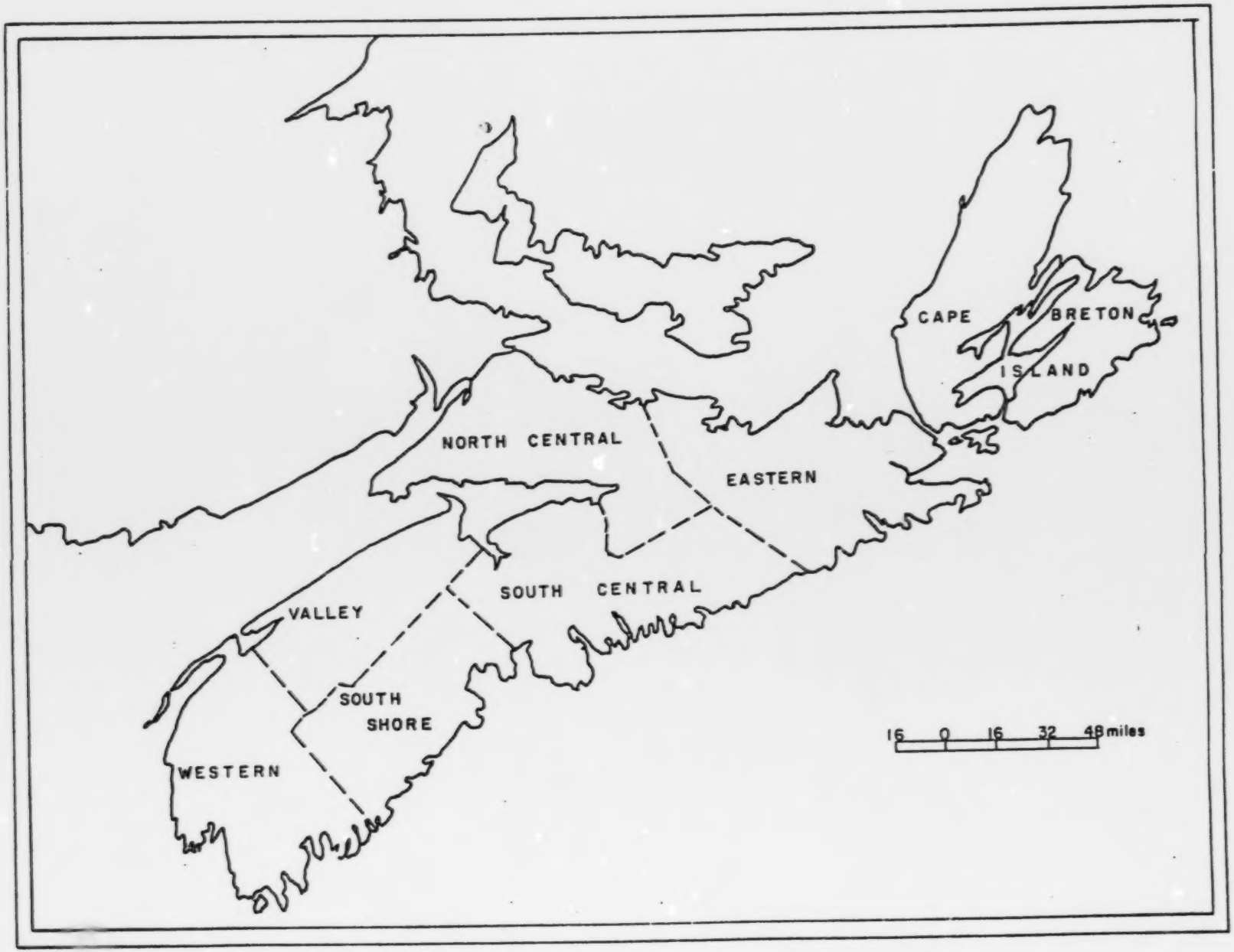
P. O. Box 68, Truro, Nova Scotia
Canada B2N 5B8

Provincial Forest Nursery
P. O. Box 219, Lawrencetown, Nova Scotia
Canada BOS 1MO

Strathlorne Forest Nursery
P. O. Box 489, Inverness, Nova Scotia
Canada BOE 1NO

Wittenburg Forest Nursery
P. O. Box 250, Stewiacke, Nova Scotia
Canada BON 2JO


CAPE
BRETON
ISLAND
NORTH CENTRAL
EASTERN
SOUTH CENTRAL
VALLEY
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SHORE
WESTERN
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INTRODUCTION

This report is the fifth and final of a series of informal information reports designed to document the quality characteristics and the annual distribution of stock from government operated forest nurseries. A summation of the past five reports will be forthcoming. Annual technical notes presenting stock quality and production-distribution records will replace this report.

Stock quality is described in terms of seedling height, root collar diameter, shoot-root ratio and dry weight. The distribution of stock is summarized by species, stock age, stock type, land owner and subdivision.

Seedling height can be an indication of a seedling field-survival percentage. Tall seedlings may have an advantage on sites where competing vegetation or where animal damage could be a problem.

Root collar (stem) diameter is a good measure of seedling durability. Seedlings with large diameter stems usually have large root systems. Stockier trees provide better support and resistance to bending by rank vegetation, soil, debris, snow or wind.

A shoot-root ratio indicates the balance between the shoot and root of the seedling. A shoot-root ratio of 3.0 means there is three times more shoot mass than root mass. Shoot-root ratios are determined by taking the dry weights of the shoots and roots separately. Seedlings with low shoot-root ratios (2.0-3.0) often have higher field-survival potential on sites where moisture is limiting, because the absorptive capacity of their roots is more nearly matched

to the transpirational demand of their shoots. Seedlings with higher shoot-root ratios (3.0+) have higher transpirational demand and plant moisture stress increases more rapidly under droughty conditions.

Cultural operations such as seedbed density, undercutting and wrenching, transplanting, irrigating and proper fertilization management can be used to manage the size and balance of the seedlings.

Reference is made to the General Development Agreement (GDA), under this agreement private woodlot owners, either individually or in group ventures, upon entering into a ten year contract with the Government of Nova Scotia, receive technical and financial assistance for forest management on their lands. This federal-provincial subsidiary agreement is funded partly by DREE and the province of Nova Scotia and was due for renewal in the spring of 1982.

METHODS

During the spring lift two or more random 25 seedling samples, per stock lot number, were selected daily from the sorting tables. Shoot height, root collar diameter, shoot/root ratio and mean seedling dry weight were determined. Shoot height was measured to the nearest millimeter (from root collar to terminal bud). The root collar diameter was measured to the nearest tenth millimeter. The shoot/root ratio was derived by dividing the dry shoot weight by the dry root weight. The mean seedling dry weight was similarly calculated by dividing the total weight of the shoots and roots by the sample size.

STOCK SIZE CLASS DISTRIBUTION(%)	
SHOOT HEIGHT(cm)	ROOT COLLAR DIAMETER(mm)
5.1 - 10.0	1.1 - 2.0
10.1 - 15.0 - 32	2.1 - 3.0 - 40
15.1 - 20.0 - 64	3.1 - 4.0 - 56
20.1 - 25.0 - 4	4.1 - 5.0 - 4
25.1 - 30.0	5.1 - 6.0
30.1 - 35.0	6.1 - 7.0
35.1 - 40.0	7.1 - 8.0
40.1 - 45.0	8.1 - 9.0
45.1+	9.1 - 10.0
	10.1 - 11.0
	11.1 - 12.0
	12.1+

	Mean	Range of sample means
Diameter(mm)	3.1	3.0 - 3.3
Shoot Height(cm)	16.3	15.9 - 16.8
Shoot/Root(ODW)	2.14	2.11 - 2.16
Seedling Dry Weight(g)	1.94	
Sample Size	50	

Figure 1 . . Balsam fir 2/0, stock lot LO8N281.

STOCK SIZE CLASS DISTRIBUTION(%)	
SHOOT HEIGHT(cm)	ROOT COLLAR DIAMETER(mm)
5.1 - 10.0 - 2	1.1 - 2.0 - 39
10.1 - 15.0 - 27	2.1 - 3.0 - 11
15.1 - 20.0 - 17	3.1 - 4.0
20.1 - 25.0 - 4	4.1 - 5.0
25.1 - 30.0	5.1 - 6.0
30.1 - 35.0	6.1 - 7.0
35.1 - 40.0	7.1 - 8.0
40.1 - 45.0	8.1 - 9.0
45.1+	9.1 - 10.0
	10.1 - 11.0
	11.1 - 12.0
	12.1+

	Mean	Range of sample means
Diameter(mm)	1.9	1.8 - 2.0
Shoot Height(cm)	19.8	17.9 - 21.6
Shoot/Root(ODW)	3.41	2.94 - 3.87
Seedling Dry Weight(g)	1.05	.84 - 1.26
Sample Size	50	

Figure 2. Black spruce multipot, Strathlorne, seeded June 1981.

Figure 3 . Red spruce multipot, Wittenburg

	Grade 1	Grade 2	Grade 3
RCD(mm)	2.6	2.6	2.1
SHT(cmO	28.2	23.9	20.4
S/R .	1.33	1.44	1.65
MSDW(g)	5.97	5.48	3.10
Sample size	50	50	50

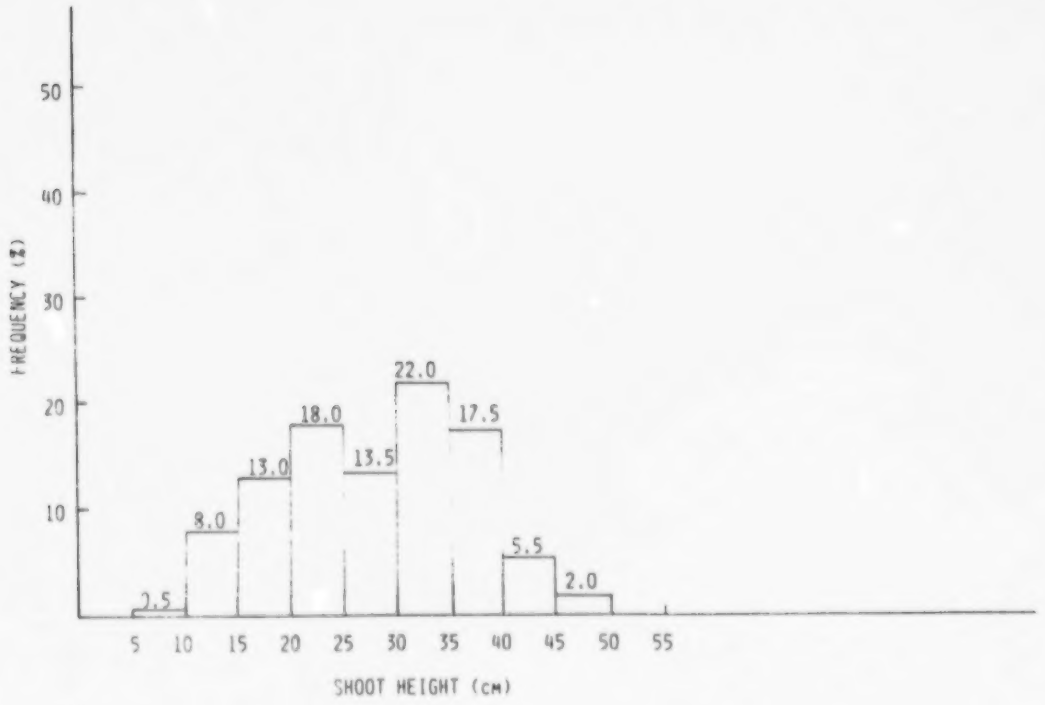
Grades 1 and 2 seeded January, 1981.

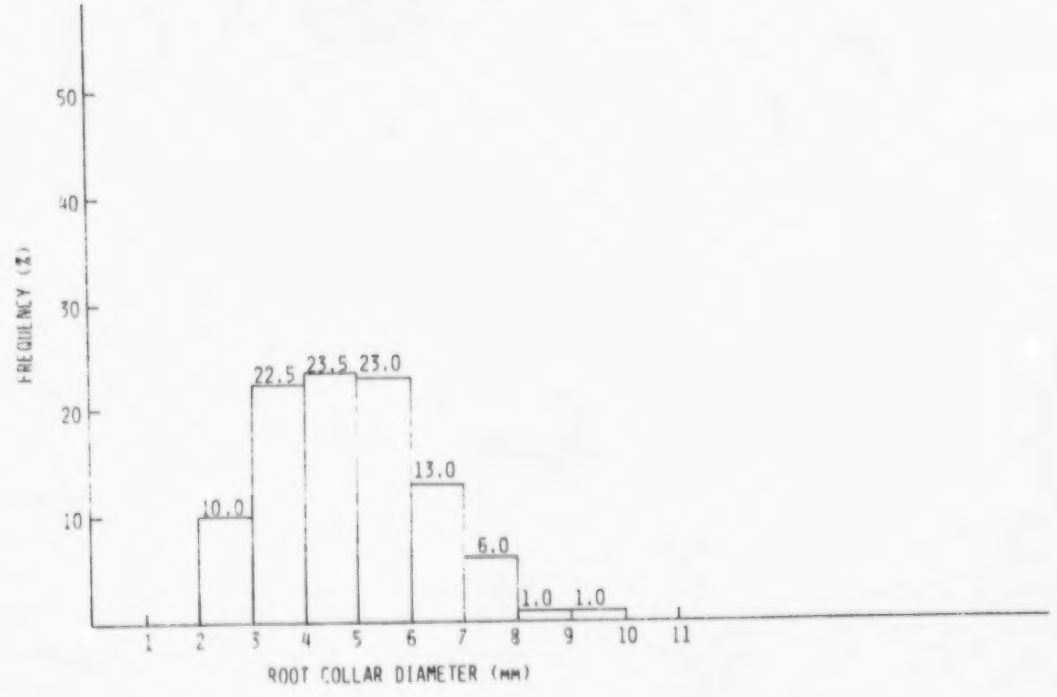
Grade 3 seeded June, 1982.

Grade 1. Non-graded, soluble fertilized.

Grade 2. Non-graded, osmocote fertilized.

Grade 3. Graded to a 15 cm top or better.





	Mean	Range of sample means
Diameter(mm)	4.7	3.2 - 5.3
Shoot Height(cm)	27.6	17.8 - 35.0
Shoot/Root(ODW)	3.70	3.31 - 4.46
Seedling Dry Weight(g)	6.24	4.45 - 8.59
Sample Size	200	

Figure 4. Jack pine 2/0, stock lots COIA582, LO8A482 and LO8M182.

ROOT COLLAR DIAMETER(mm)

Stock Lot No.	Sample Size	Mean	Range of sample means
CO1A582	75	4.9	4.6 - 5.3
LO8A482	25	4.7	-
LO8M182	100	4.4	3.2 - 4.9

SHOOT HEIGHT(cm)

CO1A582		19.6	17.8 - 20.9
LO8A482		29.9	-
LO8M182		33.2	31.4 - 35.0

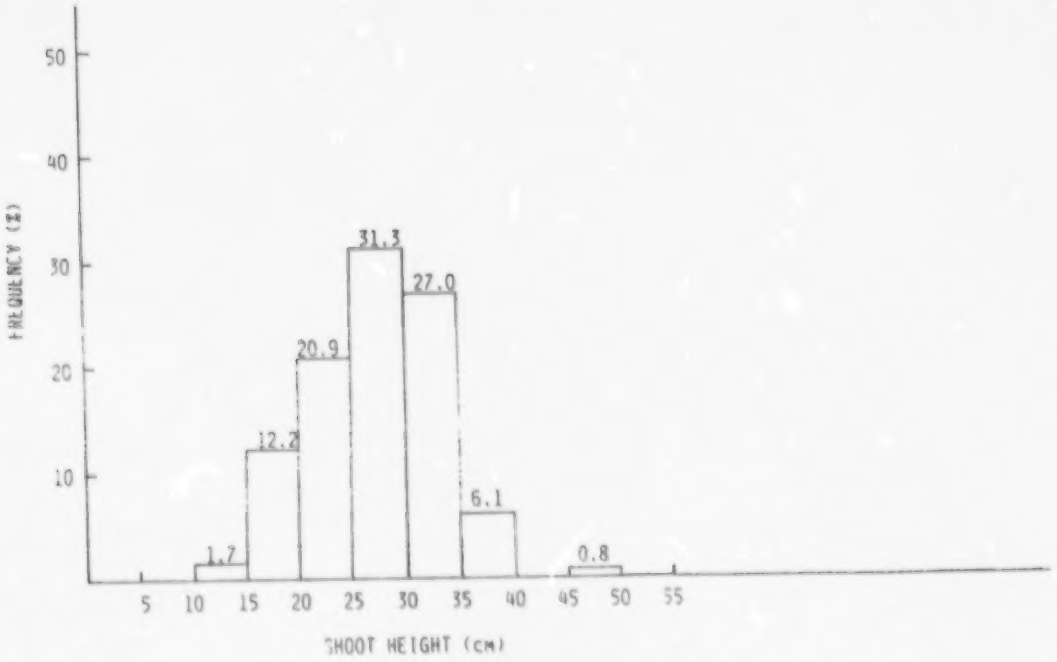
SHOOT/ROOT(ODW)

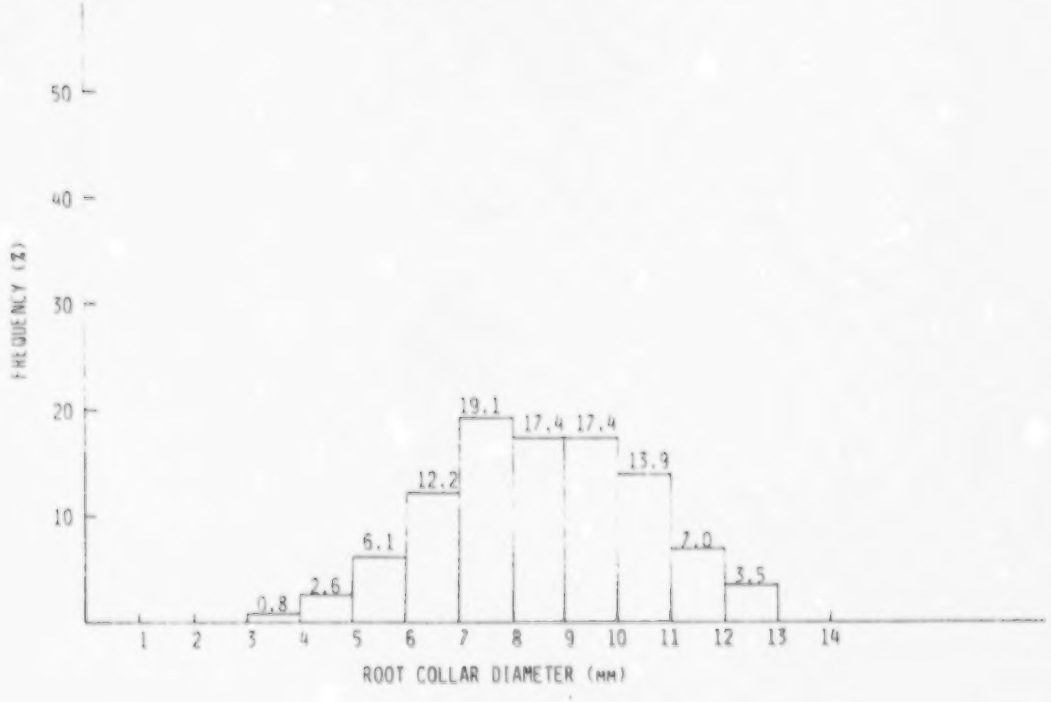
CO1A582		3.64	3.31 - 3.97
LO8A482		3.64	-
LO8M182		3.82	3.50 - 4.46

SEEDLING DRY WEIGHT(grams)

CO1A582		5.35	4.45 - 5.97
LO8A482		6.29	-
LO8M182		7.08	6.20 - 8.59

Figure 4. Data for individual stock lots of jack pine 2/0.





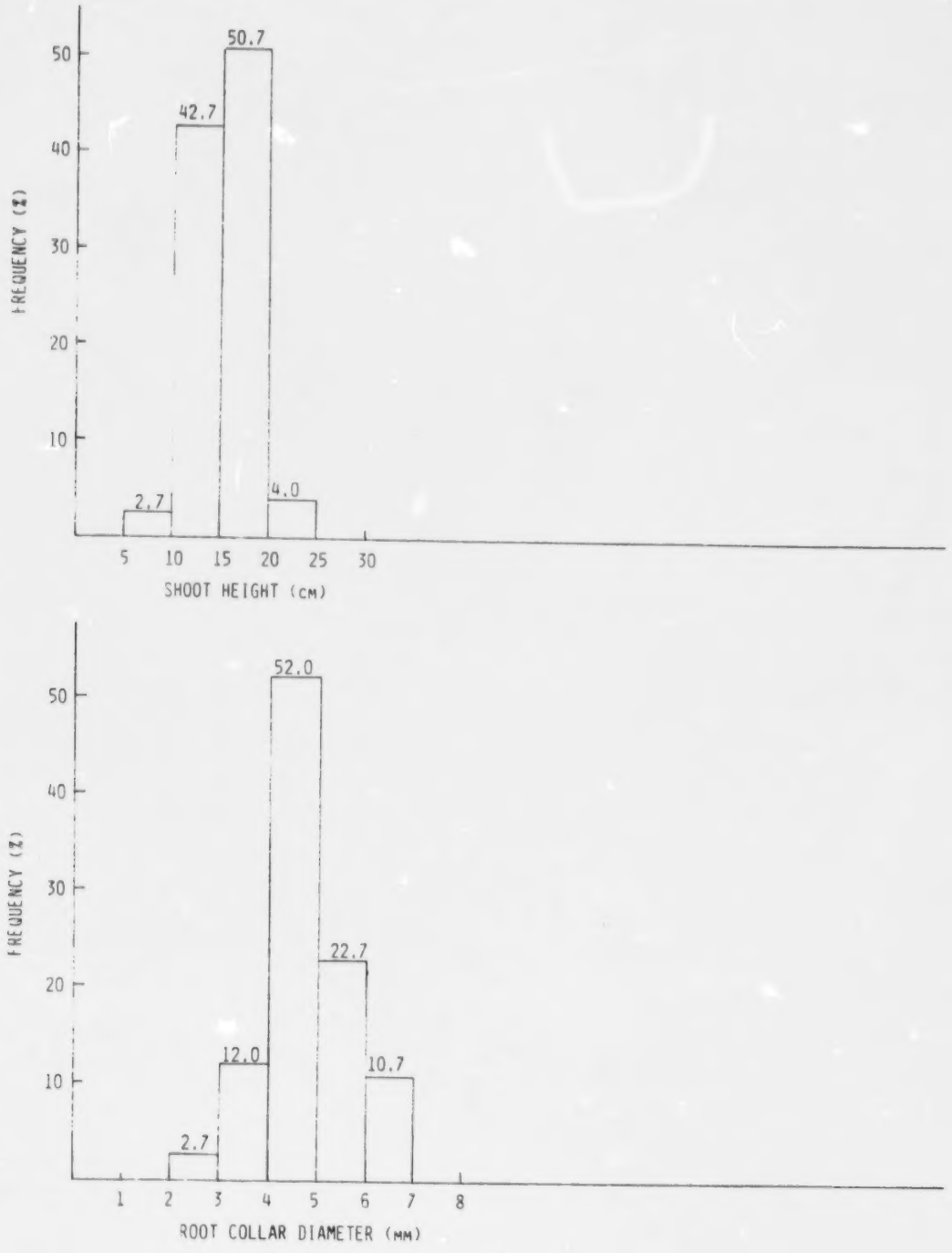
	Mean	Range of sample means
Diameter(mm)	8.4	7.9 - 8.9
Shoot Height(cm)	28.0	24.6 - 33.0
Shoot/Root(ODW)	3.28	2.27 - 4.60
Seedling Dry Weight(g)	24.86	17.40 - 34.90
Sample Size	115	

Figure 5 . Red pine 2/2, stock lots EKA582 and S1OM182.

ROOT COLLAR DIAMETER(mm)

Stock Lot No.	Sample Size	Mean	Range of sample means
EKA582	75	8.6	8.4 - 8.8
S1OM181	40	8.2	7.9 - 8.9
		SHOOT HEIGHT(cm)	
EKA582		26.5	24.7 - 27.8
S1OM182		29.4	24.6 - 33.0
		SHOOT/ROOT(ODW)	
EKA582		2.70	2.27 - 3.26
SIOM182		3.85	3.35 - 4.60
		SEEDLING DRY WEIGHT(grams)	
EKA582		29.05	24.25 - 34.90
S1OM182		20.66	17.40 - 26.85

Figure 5 . Data for individual stock lots of red pine 2/2.



	Mean	Range of sample means
Diameter(mm)	4.8	4.6 - 5.0
Shoot Height(cm)	15.6	14.3 - 16.2
Shoot/Root(ODW)	2.25	1.93 - 2.52
Seedling Dry Weight(g)	6.99	6.52 - 7.23
Sample Size	75	

Figure 6 . Red pine 2/1, stock lots A12A482 and E15A482.

ROOT COLLAR DIAMETER(mm)

Stock Lot No.	Sample Size	Mean	Range of sample means
A12A482	25	4.9	
E15A482	50	4.8	4.6 - 5.0

SHOOT HEIGHT(cm)

A12A482		16.0	-
E15A482		15.2	14.3 - 16.2

SHOOT/ROOT(ODW)

A12A482		2.52	-
E1 A482		1.98	1.93 - 2.03

SEEDLING DRY WEIGHT(grams)

A12A482		7.09	-
E15A482		6.88	6.52 - 7.23

Figure 6 . Data for individual stock lots of red pine 2/1.

STOCK SIZE CLASS DISTRIBUTION(%)			
SHOOT HEIGHT(cm)		ROOT COLLAR DIAMETER(mm)	
5.1 - 10.0		1.1 - 2.0	
10.1 - 15.0	- 4.0	2.1 - 3.0	- 1.3
15.1 - 20.0	- 13.3	3.1 - 4.0	- 1.3
20.1 - 25.0	- 21.3	4.1 - 5.0	- 13.3
25.1 - 30.0	- 32.0	5.1 - 6.0	- 21.3
30.1 - 35.0	- 13.3	6.1 - 7.0	- 13.3
35.1 - 40.0	- 6.7	7.1 - 8.0	- 22.7
40.1 - 45.0	- 5.3	8.1 - 9.0	- 13.3
45.1+	- 4.0	9.1 - 10.0	- 8.0
		10.1 - 11.0	- 2.7
		11.1 - 12.0	- 2.7
		12.1+	

	Mean	Range of sample means
Diameter(mm)	7.1	6.4 - 8.0
Shoot Height(cm)	27.4	25.6 - 30.7
Shoot/Root(ODW)	3.61	3.10 - 3.93
Seedling Dry Weight(g)	19.09	14.18 - 26.54
Sample Size	75	

Figure 7 . Red pine 3/0, stock lot E20A482.

STOCK SIZE CLASS DISTRIBUTION(%)	
SHOOT HEIGHT(cm)	ROOT COLLAR DIAMETER(mm)
5.1 - 10.0	1.1 - 2.0
10.1 - 15.0	2.1 - 3.0
15.1 - 20.0 - 28	3.1 - 4.0
20.1 - 25.0 - 48	4.1 - 5.0 - 4
25.1 - 30.0 - 12	5.1 - 6.0 - 4
30.1 - 35.0 - 12	6.1 - 7.0 - 16
35.1 - 40.0 -	7.1 - 8.0 - 36
40.1 - 45.0	8.1 - 9.0 - 16
45.1+	9.1 - 10.0 - 16
	10.1 - 11.0 - 4
	11.1 - 12.0 - 4
	12.1+

	Mean	Range of sample means
Diameter(mm)	8.0	-
Shoot Height(cm)	22.9	-
Shoot/Root(ODW)	2.37	-
Seedling Dry Weight(g)	21.13	-
Sample Size	25	

Figure 8. White pine 2/2, stock lot A10A482.

STOCK SIZE CLASS DISTRIBUTION(%)	
SHOOT HEIGHT(cm)	ROOT COLLAR DIAMETER(mm)
5.1 - 10.0 - 44	1.1 - 2.0 - 6
10.1 - 15.0 - 50	2.1 - 3.0 - 74
15.1 - 20.0 - 6	3.1 - 4.0 - 18
20.1 - 25.0	4.1 - 5.0 - 2
25.1 - 30.0	5.1 - 6.0
30.1 - 35.0	6.1 - 7.0
35.1 - 40.0	7.1 - 8.0
40.1 - 45.0	8.1 - 9.0
45.1+	9.1 - 10.0
	10.1 - 11.0
	11.1 - 12.0
	12.1+

	Mean	Range of sample means
Diameter(mm)	2.8	2.7 - 3.0
Shoot Height(cm)	10.5	10.4 - 10.7
Shoot/Root(ODW)	2.21	2.07 - 2.35
Seedling Dry Weight(g)	2.75	2.55 - 2.94
Sample Size	50	

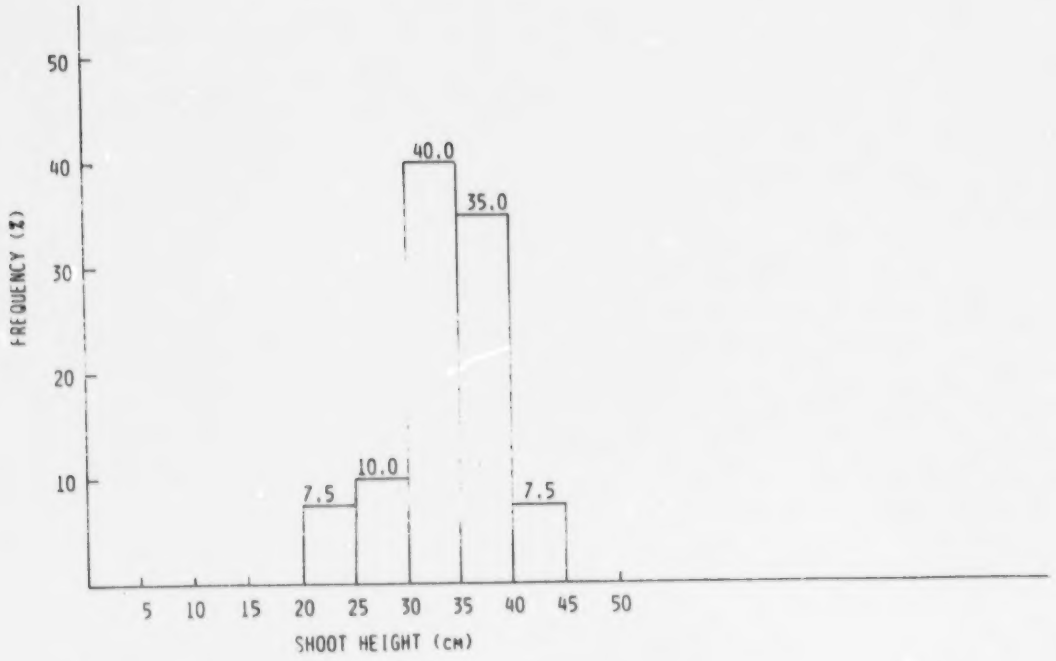
Figure 9. White pine 2/0, stock lot LO8A481.

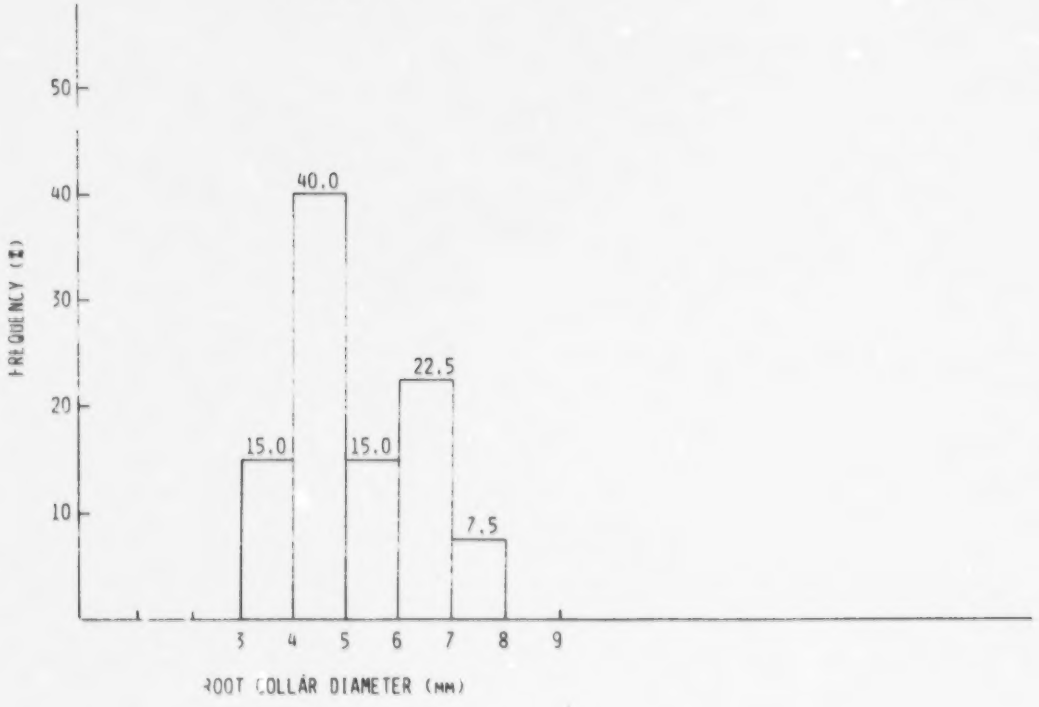
STOCK SIZE CLASS DISTRIBUTION(%)

SHOOT HEIGHT(cm)		ROOT COLLAR DIAMETER(mm)	
5.1 - 10.0		1.1 - 2.0	- 2
10.1 - 15.0	-	2.1 - 3.0	- 6
15.1 - 20.0	- 2	3.1 - 4.0	- 4
20.1 - 25.0	- 6	4.1 - 5.0	- 26
25.1 - 30.0	- 14	5.1 - 6.0	- 16
30.1 - 35.0	- 6	6.1 - 7.0	- 12
35.1 - 40.0	- 30	7.1 - 8.0	- 18
40.1 - 45.0	- 24	8.1 - 9.0	- 10
45.1+	- 18	9.1 - 10.0	- 4
		10.1 - 11.0	- 2
		11.1 - 12.0	
		12.1+	

	Mean	Range of sample means
Diameter(mm)	6.0	5.7 - 6.3
Shoot Height(cm)	38.1	-
Shoot/Root(ODW)	3.12	3.09 - 3.14
Seedling Dry Weight(g)	14.28	12.44 - 16.12
Sample Size	50	

Figure 10. Black spruce 2/2, stock lot A1ON281.





	Mean	Range of sample means
Diameter(mm)	5.3	5.0 - 5.7
Shoot Height(cm)	33.4	30.6 - 34.5
Shoot/Root(ODW)	2.02	1.93 - 2.11
Seedling Dry Weight(g)	8.68	8.20 - 9.20
Sample Size	40	

Figure 11. Black spruce 2/1, stock lot S16A382 and S16A482.

ROOT COLLAR DIAMETER(mm)

Stock Lot No.	Sample Size	Mean	Range of sample means
S16A382	20	5.3	5.1 - 5.4
S16A482	20	5.3	5.0 - 5.7

SHOOT HEIGHT(cm)

S16A382		34.3	34.0 - 34.5
S16A482		32.4	30.6 - 34.1

SHOOT/ROOT(ODW)

S16A382		2.02	1.97 - 2.07
S16A482		2.02	1.93 - 2.11

SEEDLING DRY WEIGHT(grams)

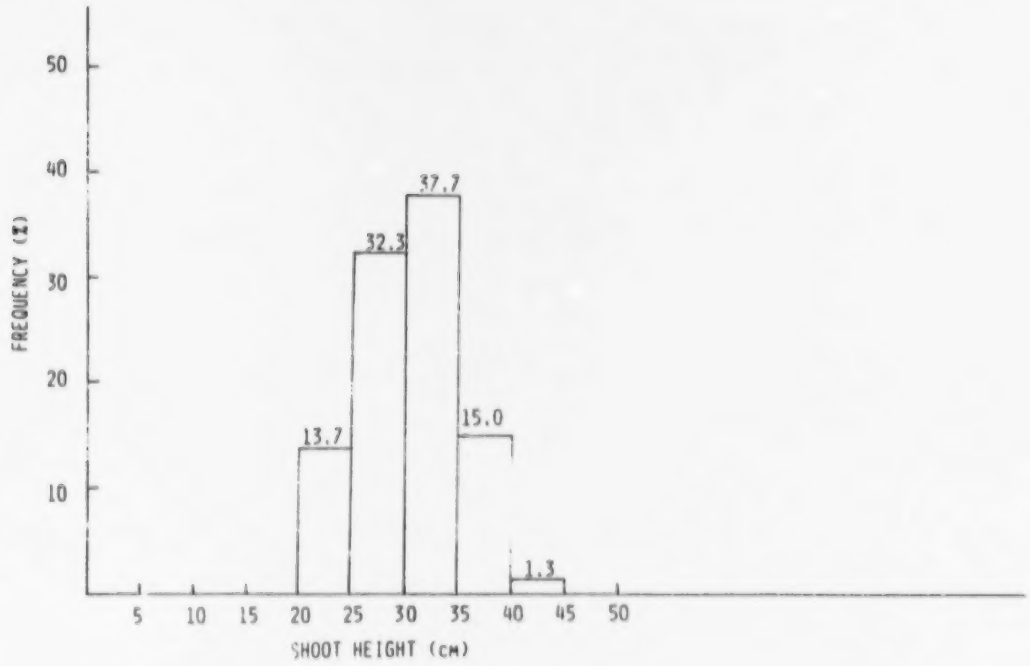
S16A382		8.90	8.60 - 9.20
S16A482		8.45	8.20 - 8.70

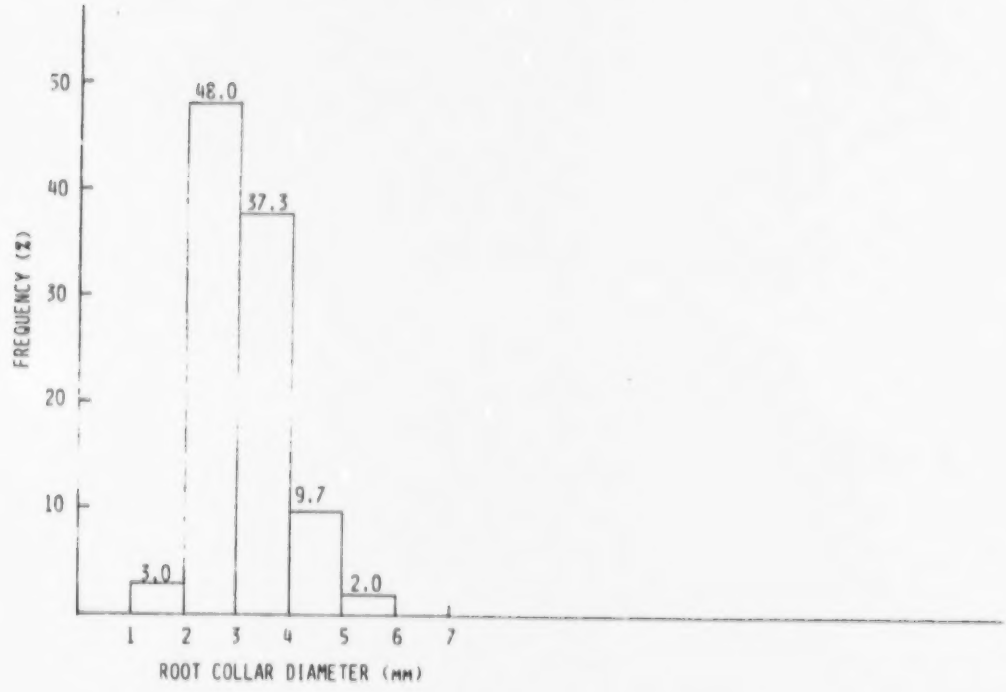
Figure 11.Data for individual stock lots of black spruce 2/1.

STOCK SIZE CLASS DISTRIBUTION(%)			
SHOOT HEIGHT(cm)		ROOT COLLAR DIAMETER(mm)	
5.1 - 10.0		1.1 - 2.0	
10.1 - 15.0		2.1 - 3.0 -	4.0
15.1 - 20.0 -		3.1 - 4.0 -	25.3
20.1 - 25.0 -	6.7	4.1 - 5.0 -	25.3
25.1 - 30.0 -	29.3	5.1 - 6.0 -	25.3
30.1 - 35.0 -	30.7	6.1 - 7.0 -	8.0
35.1 - 40.0 -	22.7	7.1 - 8.0 -	6.7
40.1 - 45.0 -	10.7	8.1 - 9.0 -	2.7
45.1+		9.1 - 10.0 -	1.3
		10.1 - 11.0 -	1.3
		11.1 - 12.0	
		12.1+	

	Mean	Range of sample means
Diameter(mm)	5.1	4.6 - 5.5
Shoot Height(cm)	32.6	30.6 - 34.3
Shoot/Root(ODW)	2.66	2.42 - 2.96
Seedling Dry Weight(g)	7.99	6.40 - 9.85
Sample Size	75	

Figure 12. Black spruce 3/0, stock lot E20N181.





	Mean	Range of sample means
Diameter(mm)	3.2	2.5 - 3.5
Shoot Height(cm)	29.9	27.0 - 35.1
Shoot/Root(ODW)	4.82	3.97 - 6.39
Seedling Dry Weight(g)	3.31	2.35 - 4.24
Sample Size	300	

Figure 13 . Black spruce 2/0, stock lots LO8A482 and LO8A582.

ROOT COLLAR DIAMETER(mm)

Stock Lot No.	Sample Size	Mean	Range of sample means
LO8A482	250	3.1	2.5 - 3.5
LO8A582	50	3.2	3.0 - 3.4

SHOOT HEIGHT(cm)

LO8A482	30.8	27.8 - 35.1
LO8A582	29.0	27.0 - 30.9

SHOOT/ROOT(ODW)

LO8A482	5.02	3.97 - 6.39
LO8A582	4.61	4.40 - 4.81

SEEDLING DRY WEIGHT(grams)

LO8A482	3.27	2.35 - 4.24
LO8A582	3.35	2.57 - 4.13

Figure13 . Data for individual stock lots of black spruce 2/0.

STOCK SIZE CLASS DISTRIBUTION(%)			
SHOOT HEIGHT(cm)		ROOT COLLAR DIAMETER(mm)	
5.1 - 10.0		1.1 - 2.0	
10.1 - 15.0		2.1 - 3.0	
15.1 - 20.0		3.1 - 4.0	
20.1 - 25.0	- 2	4.1 - 5.0	
25.1 - 30.0	- 4	5.1 - 6.0	
30.1 - 35.0	- 10	6.1 - 7.0	- 4
35.1 - 40.0	- 22	7.1 - 8.0	- 4
40.1 - 45.0	- 26	8.1 - 9.0	- 12
45.1+	- 36	9.1 - 10.0	- 14
		10.1 - 11.0	- 26
		11.1 - 12.0	- 14
		12.1+	- 26

	Mean	Range of sample means
Diameter(mm)	10.9	10.2 - 11.6
Shoot Height(cm)	42.6	40.0 - 45.2
Shoot/Root(ODW)	2.11	2.10 - 2.13
Seedling Dry Weight(g)	45.83	40.30 - 51.35
Sample Size	50	

Figure 14. Norway spruce 2/2, stock lot EKA582.

STOCK SIZE CLASS DISTRIBUTION(%)			
SHOOT HEIGHT(cm)		ROOT COLLAR DIAMETER(mm)	
5.1 - 10.0		1.1 - 2.0	
10.1 - 15.0		2.1 - 3.0	- 2
15.1 - 20.0	- 32	3.1 - 4.0	- 6
20.1 - 25.0	- 36	4.1 - 5.0	- 28
25.1 - 30.0	- 28	5.1 - 6.0	- 22
30.1 - 35.0	- 2	6.1 - 7.0	- 22
35.1 - 40.0	- 2	7.1 - 8.0	- 14
40.1 - 45.0	-	8.1 - 9.0	- 2
45.1+		9.1 - 10.0	
		10.1 - 11.0	- 4
		11.1 - 12.0	
		12.1+	

	Mean	Range of sample means
Diameter(mm)	5.8	5.7 - 6.0
Shoot Height(cm)	22.9	20.7 - 25.1
Shoot/Root(ODW)	1.52	1.50 - 1.55
Seedling Dry Weight(g)	10.91	10.12 - 11.70
Sample Size	50	

Figure 15. Norway spruce 2/1, stock lot LO3M282.

STOCK SIZE CLASS DISTRIBUTION(%)

SHOOT HEIGHT(cm)		ROOT COLLAR DIAMETER(mm)	
5.1 - 10.0		1.1 - 2.0	
10.1 - 15.0		2.1 - 3.0	
15.1 - 20.0		3.1 - 4.0	- 2
20.1 - 25.0	- 4	4.1 - 5.0	- 18
25.1 - 30.0	- 12	5.1 - 6.0	- 32
30.1 - 35.0	- 16	6.1 - 7.0	- 26
35.1 - 40.0	- 14	7.1 - 8.0	- 12
40.1 - 45.0	- 38	8.1 - 9.0	- 8
45.1+	- 16	9.1 - 10.0	- 0
		10.1 - 11.0	- 2
		11.1 - 12.0	
		12.1+	

	Mean	Range of sample means
Diameter(mm)	6.2	6.0 - 6.4
Shoot Height(cm)	38.6	36.6 - 40.7
Shoot/Root(ODW)	2.82	2.58 - 3.06
Seedling Dry Weight(g)	14.67	14.06 - 15.27
Sample Size	50	

Figure 16. Norway spruce 3/0, stock lots E20A482 and E20A582.

STOCK SIZE CLASS DISTRIBUTION(%)	
SHOOT HEIGHT(cm)	ROOT COLLAR DIAMETER(mm)
5.1 - 10.0	1.1 - 2.0 - 4
10.1 - 15.0	2.1 - 3.0 - 58
15.1 - 20.0 - 26	3.1 - 4.0 - 36
20.1 - 25.0 - 52	4.1 - 5.0 - 2
25.1 - 30.0 - 18	5.1 - 6.0
30.1 - 35.0 - 4	6.1 - 7.0
35.1 - 40.0	7.1 - 8.0
40.1 - 45.0	8.1 - 9.0
45.1+	9.1 - 10.0
	10.1 - 11.0
	11.1 - 12.0
	12.1+

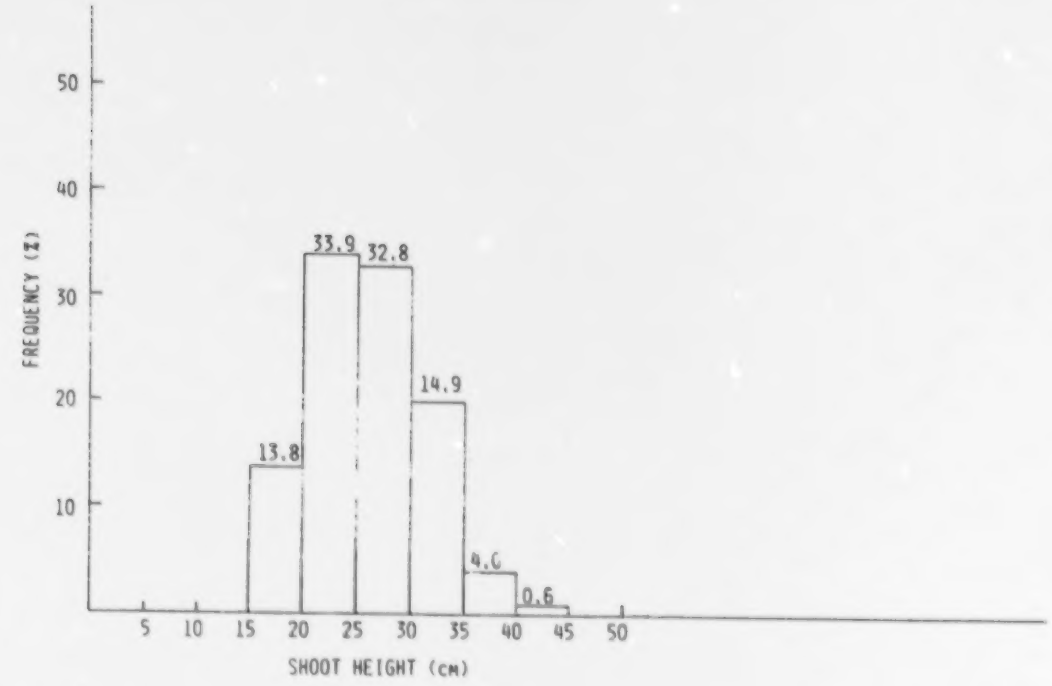
	Mean	Range of sample means
Diameter(mm)	2.8	2.8 - 2.9
Shoot Height(cm)	22.8	22.6 - 23.0
Shoot/Root(ODW)	3.54	3.41 - 3.67
Seedling Dry Weight(g)	2.23	2.12 - 2.33
Sample Size	50	

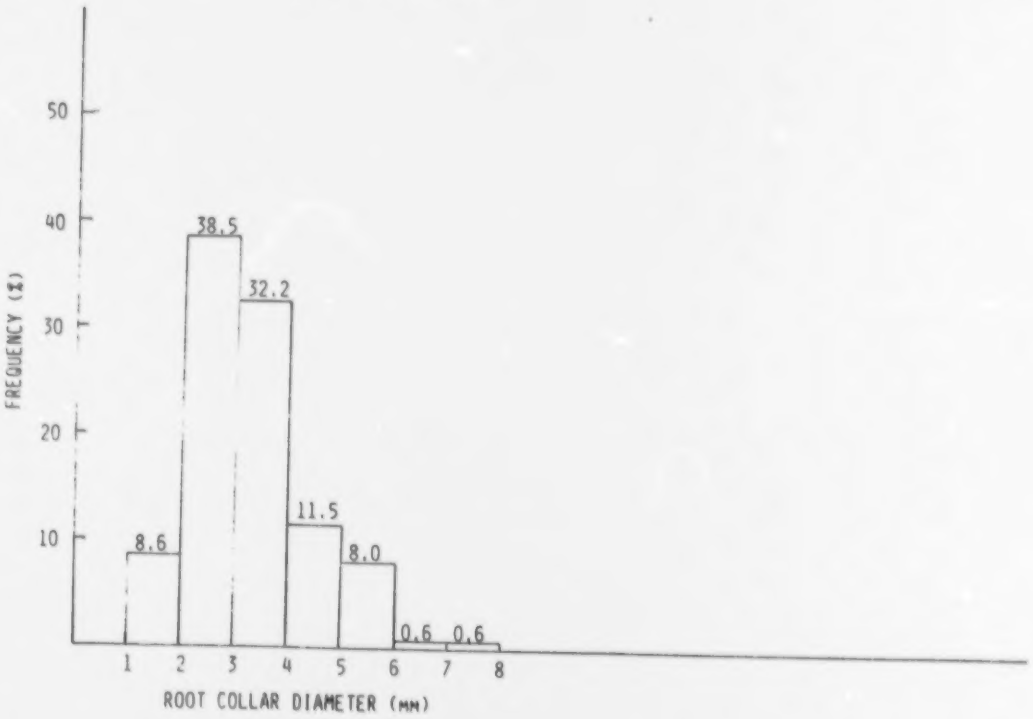
Figure 17. Norway spruce 2/0, stock lot LO8N281.

STOCK SIZE CLASS DISTRIBUTION(%)	
SHOOT HEIGHT(cm)	ROOT COLLAR DIAMETER(mm)
5.1 - 10.0	1.1 - 2.0
10.1 - 15.0	2.1 - 3.0 - 8
15.1 - 20.0 - 2	3.1 - 4.0 - 26
20.1 - 25.0 - 26	4.1 - 5.0 - 34
25.1 - 30.0 - 44	5.1 - 6.0 - 22
30.1 - 35.0 - 16	6.1 - 7.0 - 8
35.1 - 40.0 - 12	7.1 - 8.0 - 2
40.1 - 45.0	8.1 - 9.0
45.1+	9.1 - 10.0
	10.1 - 11.0
	11.1 - 12.0
	12.1+

	Mean	Range of sample means
Diameter(mm)	4.6	4.1 - 5.1
Shoot Height(cm)	27.9	26.3 - 29.5
Shoot/Root(ODW)	2.80	2.44 - 3.16
Seedling Dry Weight(g)	8.23	6.62 - 9.84
Sample Size	50	

Figure 18. Red spruce 2/2, stock lot A10N181.





	Mean	Range of sample means
Diameter(mm)	4.5	3.9 - 5.1
Shoot Height(cm)	25.1	22.4 - 30.1
Shoot/Root(ODW)	2.41	1.73 - 2.90
Seedling Dry Weight(g)	8.48	5.34 - 10.20
Sample Size	174	

Figure 19. Red spruce 2/1, stock lots LO3M182, LO1M182, LO7A482, LO3A482 & E16N181.

ROOT COLLAR DIAMETER(mm)

Stock Lot No.	Sample Size	Mean	Range of sample means
LO3M182	25	4.7	-
LO1M182	25	4.5	-
LO7A482	25	4.2	-
LO3A482	25	5.1	-
E16N181	74	3.9	3.8 - 4.0

SHOOT HEIGHT(cm)

LO3M182	23.5	-
LO1M182	26.8	-
LO7A482	22.4	-
LO3A482	25.3	-
E16N181	27.4	25.6 - 30.1

SHOOT/ROOT(ODW)

LO3M182	2.63	-
LO1M182	2.11	-
LO7A482	1.73	-
LO3A482	2.66	-
E16N181	2.90	2.60 - 3.18

SEEDLING DRY WEIGHT(grams)

LO3M182	9.55	-
LO1M182	9.33	-
LO7A482	7.15	-
LO3A482	10.20	-
E16N181	6.16	5.34 - 7.20

Figure 19. Data for individual stock lots of red spruce 2/1.

STOCK SIZE CLASS DISTRIBUTION(%)			
SHOOT HEIGHT(cm)		ROOT COLLAR DIAMETER(mm)	
5.1 - 10.0		1.1 - 2.0	
10.1 - 15.0		2.1 - 3.0	- 16
15.1 - 20.0		3.1 - 4.0	- 45.3
20.1 - 25.0	- 20.0	4.1 - 5.0	- 21.3
25.1 - 30.0	- 12.0	5.1 - 6.0	- 13.3
30.1 - 35.0	- 29.3	6.1 - 7.0	- 2.7
35.1 - 40.0	- 16.0	7.1 - 8.0	- 1.3
40.1 - 45.0	- 6.7	8.1 - 9.0	
45.1+	- 16.0	9.1 - 10.0	
		10.1 - 11.0	
		11.1 - 12.0	
		12.1+	

	Mean	Range of sample means
Diameter(mm)	4.0	3.9 - 4.2
Shoot Height(cm)	34.5	31.4 - 40.5
Shoot/Root(ODW)	3.93	3.13 - 4.72
Seedling Dry Weight(g)	6.99	6.92 - 7.12
Sample Size	75	

Figure 20. Red spruce 3/0, stock lot E15N181.

STOCK SIZE CLASS DISTRIBUTION(%)	
SHOOT HEIGHT(cm)	ROOT COLLAR DIAMETER(mm)
5.1 - 10.0	1.1 - 2.0
10.1 - 15.0	2.1 - 3.0
15.1 - 20.0 - 24	3.1 - 4.0 - 4
20.1 - 25.0 - 24	4.1 - 5.0 - 2
25.1 - 30.0 - 24	5.1 - 6.0 - 8
30.1 - 35.0 - 22	6.1 - 7.0 - 16
35.1 - 40.0 - 4	7.1 - 8.0 - 12
40.1 - 45.0 - 2	8.1 - 9.0 - 22
45.1+	9.1 - 10.0 - 10
	10.1 - 11.0 - 16
	11.1 - 12.0 - 4
	12.1+ - 6

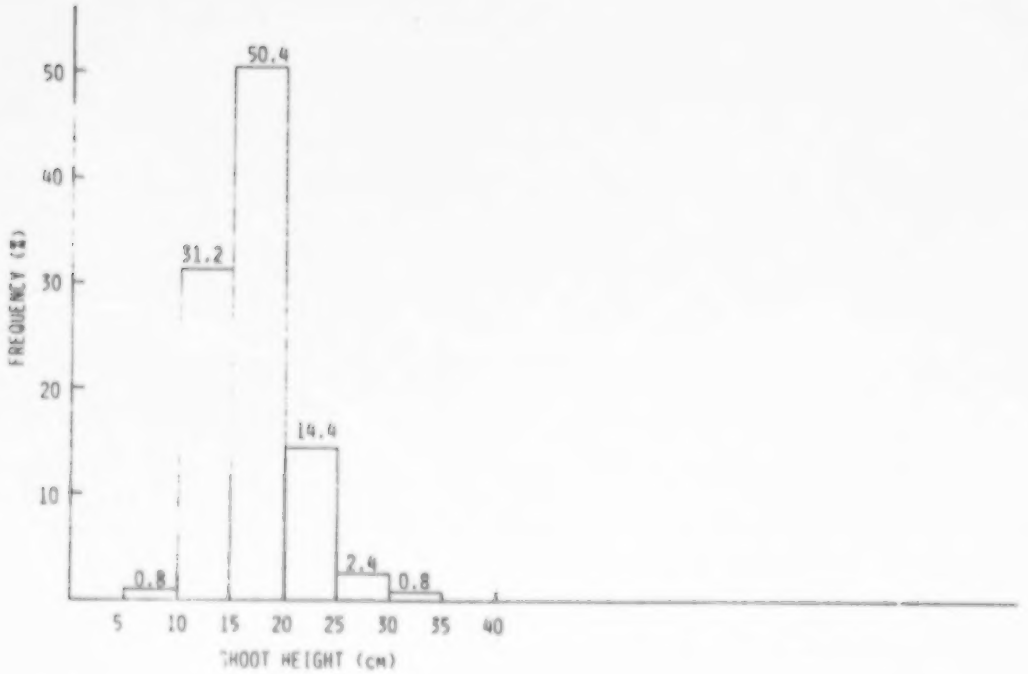
	Mean	Range of sample means
Diameter(mm)	8.4	8.3 - 8.6
Shoot Height(cm)	25.7	25.2 - 26.1
Shoot/Root(ODW)	2.24	2.22 - 2.26
Seedling Dry Weight(g)	17.12	16.97 - 17.26
Sample Size	50	

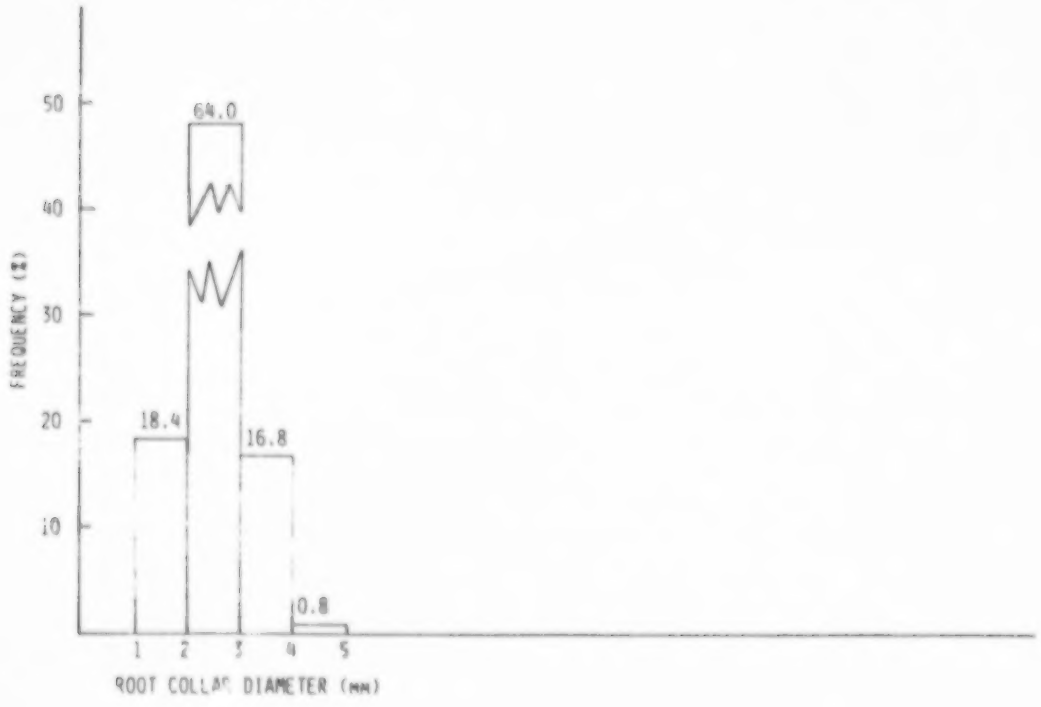
Figure 21. White spruce 2/2, stock lot A10A482.

STOCK SIZE CLASS DISTRIBUTION(%)			
SHOOT HEIGHT(cm)		ROOT COLLAR DIAMETER(mm)	
5.1 - 10.0		1.1 - 2.0	
10.1 - 15.0		2.1 - 3.0	- 8
15.1 - 20.0	- 32	3.1 - 4.0	- 24
20.1 - 25.0	- 40	4.1 - 5.0	- 24
25.1 - 30.0	- 20	5.1 - 6.0	- 28
30.1 - 35.0	- 8	6.1 - 7.0	- 16
35.1 - 40.0		7.1 - 8.0	
40.1 - 45.0		8.1 - 9.0	
45.1+		9.1 - 10.0	
		10.1 - 11.0	
		11.1 - 12.0	
		12.1+	

	Mean	Range of sample means
Diameter(mm)	4.8	-
Shoot Height(cm)	22.6	-
Shoot/Root(ODW)	2.19	-
Seedling Dry Weight(g)	5.85	-
Sample Size	25	

Figure 22. White spruce 2/1, stock lot A11N281.





	Mean	Range of sample means
Diameter(mm)	2.6	2.3 - 2.8
Shoot Height(cm)	21.6	19.2 - 23.2
Shoot/Root(ODW)	4.09	3.49 - 4.96
Seedling Dry Weight(g)	1.57	1.12 - 2.78
Sample Size	125	

Figure 23 . White spruce 2/0, stock lot L08A482.

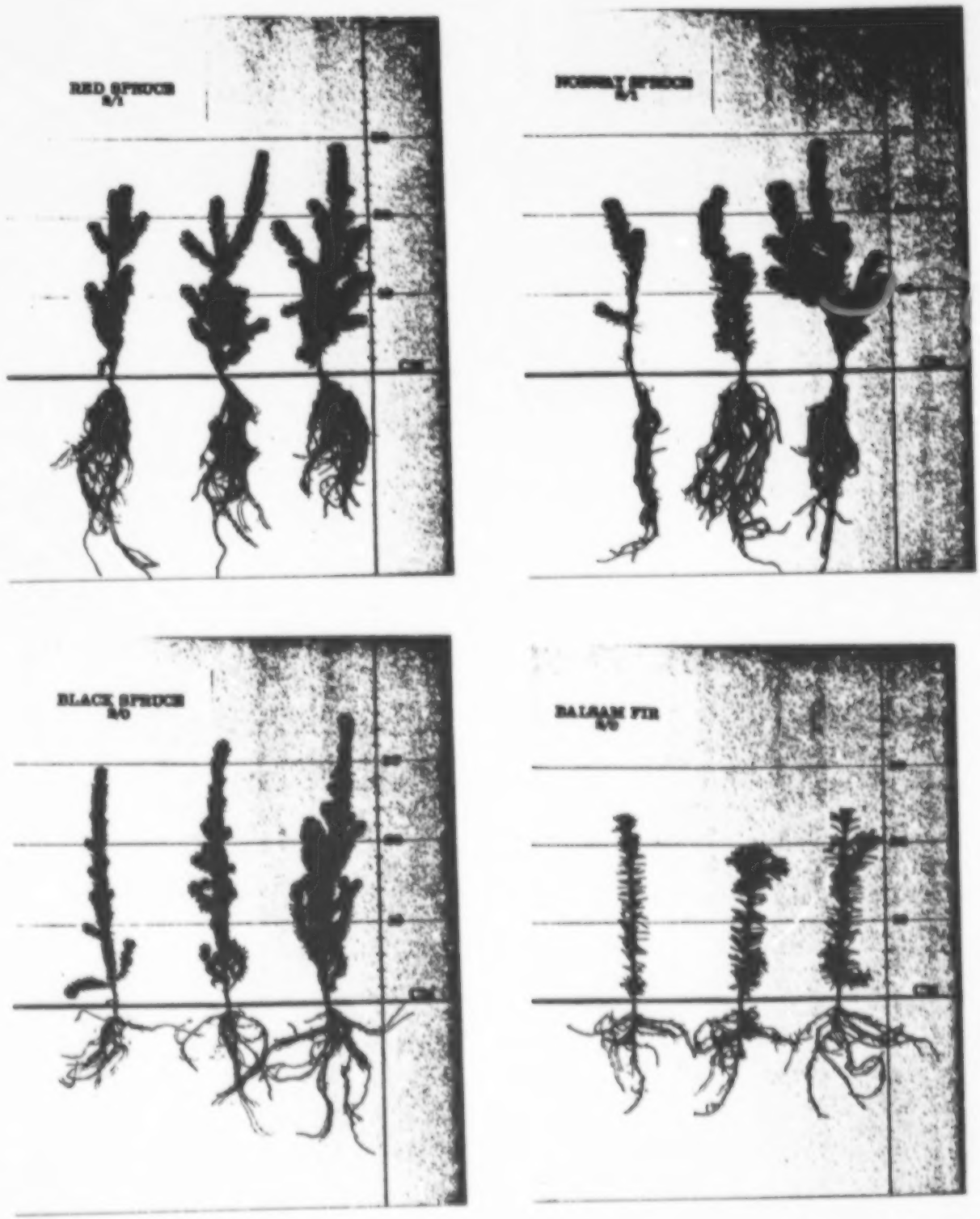


Figure 24. a) Red spruce 2/1, b) Norway spruce 2/1, c) black spruce 2/0, and d) balsam fir 2/0.

Table 1. Stock distribution to Crown lands, 1982

Subdivision	rP3/0	NS3/0	rS3/0	Others	bS2/2	NS2/1	rS2/1	bS2/1	rS(mp)	NS2/0	bS2/0	TOTALS
Cape Breton North												
Cape Breton South								4,200				4,200
Eastern							18,500					18,500
North Central	26,500	25,000		37,045		46,000			162,140	13,000	40,000	349,685
South Central							91,600		218,487			310,087
South Shore	54,500			3,807								58,307
Valley			29,000	5,100	4,800			1,200	12,649		1,700	54,449
Western	105,000						40,000					145,000
TOTALS	186,000	25,000	29,000	45,952	4,800	46,000	150,100	5,400	393,276	13,000	41,700	940,228

[1]Others
- bS3/0 - 5,100
- jP2/0 - 28,000
- wS(mp) - 9,045
- Misc(mp)- 3,807

Bareroot stock - 534,100
Container stock - 406,128

Table 2. Stock distribution to private lands under the GDA, 1982.

Subdivision	bS2/0	rS3/0	rP2/2	bS(mp)	rS2/2	rS(mp)	wS2/1	rS2/1	wP2/0	jP2/0	wS2/0	Others	Totals
Cape Breton North	16,700		3,000	9,000		13,500	11,000		300		7,700		61,200
Cape Breton South	9,500			7,000			3,500		8,200	3,800	17,000		49,000
Eastern	21,900	25,000	26,000		11,000	125,562				24,500	56,000		289,962
North Central	40,900	2,000	23,000	10,000	7,000	10,500	10,600	103,000	900	4,000	41,900	39,000	292,800
South Central	10,200			900		83,410		20,000	2,500	9,100	42,500	500	169,110
South Shore						16,950			38,750		600		56,300
Valley	54,950		800	51,200	32,400	32,886				17,700	38,950	5,000	233,886
Western	11,000	22,000	21,300	5,000	4,000	54,500		35,000	170	2,000	44,000	1,330	200,300
TOTALS	165,150	49,000	74,100	83,100	54,400	337,308	25,100	158,000	50,820	61,110	248,650	45,830	1,352,558

[1]Others
rP3/0 - 39,000
rP2/1 - 4,000
wP2/2 - 2,830

Bareroot stock - 932,150
Container stock - 420,408

Table 3. Stock distribution to lands managed as group ventures under the GDA, 1982.*

Group Venture	rP3/0	rS3/0	rP2/2	rS(mp)	rS2/1	bS(mp)	jP2/0	wS2/0	bS2/0	Others[1]	Total:
North Nova Forest Owners Cumberland Co.	39,000		8,000		48,000	10,000	4,000	20,000		7,000	136,000
Sissiboo Forest Management Digby Co.		15,000						5,000	7,000		27,000
Athol Co-op Ltd. Cumberland Co.			15,000		55,000			34,000			104,000
Baddeck Valley Wood Producers, Vict. Co.				13,500					3,500	11,000	28,000
West Pictou Forest Owners Pictou Co,							13,500	50,000	9,900		73,400
North Mountain Woodlands Anna-Kings Co.						30,000			34,950		64,950
LaForet Acadienne Digby Co.				10,500							10,500
TOTALS	39,000	15,000	23,000	24,000	103,000	40,000	17,500	109,000	55,350	18,000	443,850

[1]Others
rS2/2 - 7,000
wS2/1 -11,000

Table 4. Stock distribution to private lands not included in the CDA, 1982.

Subdivision	rP2/2	bS2/1	wP2/0	jP2/0	wS2/0	bS2/0	bF2/0	bF(mp)	Misc(mp)	Others[1]	Totals
Cape Breton North	2,900	500	2,000	200	400						6,000
Cape Breton South	17,250		2,050	5,650	1,100	500			3,600		30,150
Eastern	7,100		1,200	3,000		1,500	1,500	16,000		300	30,600
North Central	19,950		1,400	1,200	4,550	800	6,000	2,000	600	7,500	44,000
South Central	15,450	3,000	2,250	5,000	8,100	3,200	2,000	500	300	4,000	43,800
South Shore	10,500	100	13,500	6,500	1,700	5,300	19,000	14,000			70,600
Valley	7,725	500	2,000	3,550	2,650	1,100	20,500	3,500	315	100	41,940
Western	2,900		1,150	1,050	3,950	1,250	8,000	5,500			23,800
Misc									12,300	14,740	27,040
TOTALS	83,775	4,100	25,550	26,150	22,450	13,650	57,000	41,500	17,115	26,640	317,930

[1]Others
- rS2/2 - 4,000
- rP2/1 - 300
- rS(mp)- 7,500
- bS(mp)- 1,440
- Misc. bareroot -13,400

Bareroot stock - 259,315
Container stock - 58,615

Table 5. Stock distribution to the Boy Scout spring planting program, 1982.

County/Troop	rP3/0	NS3/0	rS3/0	bS2/1	wP2/0	jP2/0	bS2/0	TOTALS
Annapolis			8,000					8,000
Antigonish				5,400				5,400
Cape Breton						8,000		8,000
Colchester						2,000	8,000	10,000
Cumberland						2,000	4,000	6,000
Guysborough					500		1,000	1,500
Halifax						4,000	34,000	38,000
Hants		3,000						3,000
Inverness							1,200	1,200
Lunenburg	7,500			18,500				26,000
Queens	1,500						1,500	3,000
Shelburne	7,000							7,000
Victoria				1,000				1,000
TOTALS	16,000	3,000	8,000	24,900	500	16,000	49,700	118,100

95,900 planted on Crown
22,200 planted on GDA freehold.

Table 6. Stock distribution to provincial companies, 1982.

	Scott[1]	Bowater[2]	NSFI	TOTALS
rP3/0	2,650			2,650
NS3/0	28,990			28,990
rS3/0	4,000			4,000
bS3/0	22,000			22,000
rP2/2	15,000			15,000
wS2/2	16,000			16,000
rP2/1	126,100			126,100
NS2/1	101,850			101,850
wS2/1	50,250	1,500		51,750
rS2/1	594,500		50,000	644,500
bS2/1	173,500		40,000	213,500
jP2/0	4,500			4,500
NS2/0	54,350			54,350
wS2/0	98,000			98,000
bS2/0	236,225		299,000	535,225
rS(mp)			1,705,219	1,705,219
TOTALS	1,527,915	1,500	2,094,219	3,623,634

Table 7. Summary of bareroot and container stock distribution, 1982.

	Bareroot	Container	Total
Crown	534,100	406,128	940,228
GDA	932,150	420,408	1,352,558
Private	250,375	67,555	317,930
Boy Scouts	118,110	-	118,100
Scott International	1,527,915	-	1,527,915
Bowater Mersey	1,500	-	1,500
NSFI	389,000	1,705,219	2,094,219
TOTALS	3,753,140	2,599,310	6,352,450

Table 8. Stock distribution by species, 1982

	Total	(%)
Jack pine	135,750	2.1
Red pine	546,925	8.6
White pine	79,700	1.3
Black spruce	1,169,765	18.4
Norway spruce	272,190	4.3
Red spruce	3,544,303	55.8
White spruce	470,995	7.4
Balsam fir	98,500	1.6
Other	34,322	.5
TOTAL	6,352,450	